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TWENTY-THIRD ANNUAL REPORT

437794

OF THE

BOARD

OF

WATER COMMISSIONERS

OF THE

CITY OF ST. PAUL.

JANUARY 1, 1905.

ST. PAUL, MINN.:
THE PIONEER PRESS MFG. DEPTS.,
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TWENTY-THIRD ANNUAL REPORT

OF THE

BOARD

OF

COMPLIMENTS OF

THE BOARD OF WATER COMMISSIONERS.

JOHN CAULFIELD,
SECRETARY.

PLEASE EXCHANGE.

JANUARY 1, 1905.

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OFFICERS

OF THE

CITY WATER WORKS

JANUARY 1, 1905.

BOARD OF WATER COMMISSIONERS.

THOMAS GRACE. Term expires Jan. 1, 1905.
MICHAEL DORAN, President. Term expires Jan. 1, 1906.
JNO. J. DWYER, Vice President. Term expires Jan. 1, 1907.
THOMAS A. PRENDERGAST. Term expires Jan. 1, 1908.
JNO. W. LUX. Term expires Jan. 1, 1909.

JOHN CAULFIELD, Secretary.
JOHN LINDQUIST, Superintendent.
L. W. RUNDLETT, City Engineer and Engineer of the Board.
MARTIN FEIST, Chief Engineer and Engineer of McCarron Lake Station.
M. THOMMES, Assistant Engineer of McCarron Lake Station.
GEORGE VORUM, Assistant Engineer of McCarron Lake Station.
FRITZ JOHNSON, Assistant Engineer of McCarron Lake Station.
A. A. THOMPSON, Gate Keeper and Engineer of Vadnais Lake Station.
JACOB ABRESCH, Engineer of Centerville Station.
JOS. DOERR, Engineer of West St. Paul Station.
HERMANN GEISLER, Assistant Engineer of West St. Paul Station.
GEO. DOGRILEY, Superintendent of Meter Department.

THIRTY-THIRD ANNUAL REPORT

OF THE

BOARD OF WATER COMMISSIONERS

OF THE

CITY OF ST. PAUL, MINN.

OFFICE OF THE BOARD OF WATER COMMISSIONERS.
ST. PAUL, MINN., Jan. 1, 1905.

To the Honorable Mayor and Common Council of the City of St. Paul,

GENTLEMEN: The Board of Water Commissioners of the City of St. Paul herewith presents its twenty-third annual report for the year ending Dec. 31, 1904, together with the reports of the Secretary, Superintendent, City Engineer, Chief Engineer of the Mechanical Department and the Chief of the Meter Department. A careful perusal of these reports is invited, which will convey to your honorable body the full details of the plant and its operation.

We herewith submit the following items for your consideration. The Secretary's report gives a full history of the work of this department. He adds to the itemized statement of the year's financial operations a summary of all receipts and disbursements from the time of the purchase of the works in 1882 to date; also a number of comparative tables showing the growth of the works since the purchase.

NET COST OF WORKS TO DATE.

The original purchase	$510,000.00
Extension account (betterments in city)	2,229,557.25
Construction account (betterments outside of city)	1,417,806.00
Meters	146,500.13
Total	$4,303,863.38

An increase during the year of $82,067.51, paid for as follows:

By bonds	$2,460,000.00
From surplus earnings of the works	1,843,863.38

The present bonded indebtedness is $2,367,000.00. Nine thousand dollars ($9,000) of these bonds were purchased the past year and canceled and were paid from the sinking fund.

The sinking fund now amounts to $694,593.61, of which $694,217.30 is invested in city and county bonds and park loans and $376.31 is uninvested. The annual interest on these invested funds amounts to $27,673.69.

There are 7,909 meter accounts, an increase of 782 during the year. The total number of services is 20,919, an increase of 1,137.

During the year we have laid 30,413 feet or 5.7600 miles of new mains. There are at present 268 miles and 4,703 feet of water mains, ranging from four inches to 36 inches in diameter, 2,519 fire hydrants, 2,328 valves and 358 street sprinkling hydrants. The Superintendent recommends the laying of large mains on several of the streets for the purpose of giving better fire protection.

The total rainfall during the year was 34.11, a decrease of 3.76 inches over that of 1903, and an increase of 6.47 inches over the average annual rainfall from 1837 to 1903, inclusive. Owing to the excessive rainfall during the past two years, the Centerville Pumping Station was run only twenty (20) days during the year 1903, and did not run at all during 1904. The Vadnais Lake Station was run for sixty-four (64) days. This latter station was run only during the warm weather for the purpose of pumping water into the conduit in order to lower the temperature of the water and improving its quality. There was pumped from the artesian well plant at Vadnais Lake 266,306,632 gallons, or 3,804,419 gallons daily during the time that the pumps were running. The total amount of water used in the city was 3,510,974,547 gallons, or 9,619,107 gallons daily, a daily increase of 803,861 gallons over that of 1903. The daily consumption on the high service was 4,779,619 gallons and on low service 4,839,488 gallons. The daily consumption from Lake Phalen was 210,625 gallons and West St. Paul high service 62,598 gallons. The daily increase over two years ago was 1,552,612 gallons.

This rapid increase in the consumption of water admonishes the Board that our present impounding facilities will be taxed to the utmost within a few years, and that the Board could not begin too soon to provide large storage capacity to meet the demands of a continued series of dry years. Owing to the city's neglect to pay hydrant rental, as provided in the charter, it has been impossible for the Board to carry on the work in the country to such an extent as recommended by the engineer. There has been such a demand for laying of water mains in the city the past year, expense of which has been $61,152.46, that we were unable to expend more than $9,936.44 for the improvement and protection of our water supply.

A careful estimate of the receipts and disbursements for 1905 (other than betterments) have been made and $70,000 is the limit that can be set aside for betterments. From this amount must be deducted $64,500, the estimated cost of laying water main in the city, if the amount of pipe which the Board has the privilege of taking under its advertisement for proposals is purchased, leaving a balance of about $5,000 for outside improvements.

[illegible]

INTEREST ACCOUNT.

One hundred and nine thousand nine hundred and ninety dollars ($109,990.00) in interest has been paid on bonds issued for water works purposes and has been paid from the earnings of the works. This is $215.00 less than was paid during the year 1903.

REPAIR ACCOUNT.

Nine thousand nine hundred twelve dollars and one cent ($9,912.01) was paid on this account, of which $3,555.03 was on account of fire hydrants, $742.79 on account of valves and $5,614.19 on account of mains.

GENERAL MAINTENANCE ACCOUNT.

Fifty-eight thousand two hundred twenty-nine dollars and sixty-three cents ($58,229.63) was paid on this account. The expense of maintaining the five pumping stations and Dale street reservoir was $18,973.66 (see table No. 13), of which $10,126.29 was for salaries, $7,935.97 was for fuel, $229.45 for waste and machine oil, $647.46 was for repairs and supplies, $34.49 for kerosene oil, leaving a balance of $39,252.97 for labor and salaries of all officers, employes, office expenses, fuel and other expenses necessary for operating and maintaining the works; also the salary of the special attorney employed in connection with the suit against the City Railway Company for damages to the water system by electrolysis. (See table No. 17 for comparative statement of the expenses of maintaining the pumping stations and reservoir for the past fourteen years.)

EXTENSION ACCOUNT. (Betterments in City Limits.)

Sixty-one thousand one hundred fifty-two dollars and forty-six cents ($61,152.46) was paid on this account, of which $26,980.73 was for cast iron pipe and special castings; $26,526.43 for labor and contracts; $2,110.00 for fire hydrants; $1,611.82 for valves and valve boxes; $1,918.81 for lead and hemp packing; $728.20 for lumber and material; $1,176.01 for tools and repairs of same, and $100.46 for advertising and miscellaneous.

CONSTRUCTION ACCOUNT. (Betterments Outside of City.)

Nine thousand nine hundred and thirty-six dollars and forty-four cents ($9,936.44) was paid on this account, of which $3,125.35 was for labor and contracts; $791.59 for tools, lumber and material; $5,925.94 for engineering and right of way, and $94.01 for miscellaneous and building.

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PAY ROLL ACCOUNT. (See Table No. 10.)

All of the work in connection with the laying of water pipes the past year, constructing roads and canals at Centerville and the putting in of service pipes, fire hydrants, valves, etc., excepting the laying of the sixteen-inch main on West Seventh street from Logan to Elway, has been done by day's labor. The pay roll of all officers and employes for the year amounted to $112,597.24, and the average number of employes has been 174.

SINKING FUND. (See Table No. 12.)

This fund now amounts to $694,593.61, an increase of $15,662.71. In addition to this increase $9,000.00 of water bonds were purchased and cancelled from the proceeds of this fund at an expense of $9,831.36. There has been transferred to this fund $27,088.30, being the interest earnings of the invested funds. Of the total amount in the sinking fund $694,217.30 is invested and $376.31 uninvested.

Your attention is respectfully called to Table No. 10, accompanying this report, showing the sinking fund investments, date and character of securities, when due, rate of interest, premiums paid, etc. The annual interest on these invested funds amounts to $27,673.69.

CONTRACTS. (See Table No. 7.)

Contracts have been let during the year amounting to $68,180.04 on which $62,107.53 have been paid, leaving a balance due of $6,072.51.

On Jan. 1, 1904, the date of the last annual report, there was due on account of contracts not then completed $1,317.17, all of which have been completed and paid for.

BONDED DEBT. (See Table No. 6.)

The bonded debt has been reduced during the past year $9,000.00 by the purchasing and cancelling of nine one-thousand-dollar bonds issued by the City of St. Paul for water works purposes. The purchase of these bonds was made from the sinking fund.

The present bonded debt is $2,367,000.00 and the annual interest hereafter will be $109,665.00, and will be paid as usual from the revenue of the works. The annual saving of interest by the purchase of bonds during the past five years amounts to $4,535.00.

FRONTAGE TAX. (See Table No. 9.)

There has been collected during the year by the county treasurer $28,814.37 on account of frontage tax. There has also been paid over

by the county treasurer the sum of $760.78 for penalties and interest on account of delinquent frontage tax collected during the year 1904.

Your attention is called to Table No. 9, accompanying this report, showing in detail the collections, balances, etc., for the several years since the assessment was made. The frontage tax assessment for the year 1904, now in the hands of the county treasurer for collection, amounts to $26,810.67, being $1,695.69 less than for the year 1903.

Your attention is called to Table No. 19, showing the number of miles of mains laid annually since Aug. 10, 1882 (when the city purchased the works), the cost of same, expenditures for construction outside of city limits, annual maintenance, number of taps, annual receipts from consumers and the annual increase from same, frontage tax receipts and assessments, the number of miles of mains that will be dropped annually from the frontage tax assessments under the law passed by the legislature in 1895, exempting property in front of which mains are laid from further assessments after having made ten (10) payments. The same provision is in the new charter adopted in May, 1900.

METERS. (See Tables Nos. 14, 16 and 20.)

There are now 7,909 meter accounts, an increase of 782 during the year, of which the department owns 7,787 and consumers 122; 1,050 were tested during the year, of which 225 were old meters and 825 new; 837 were repaired.

Your attention is respectfully called to Table No. 20, showing comparative monthly statements for years 1896 to 1904, inclusive, the number of meters, the number of cubic feet of water consumed, the amount of revenue received, the revenue received for meter rent and the average rate received for 100 cubic feet. The number of meter accounts has increased during the past twelve years from 580 to 7,909.

SERVICES. (See Table No. 11.)

During the year 1,137 applications were made for service connections, of which 856 were on high service and 281 on low service. This is the largest number of services that has been put in since 1890. The total number of applications to date is 20,919, of which 12,981 are on high service and 7,938 on low service. There were 2,012 applications, all on low service, when the city purchased the works in 1882.

Table No. 12 shows the number of applications made for water services annually from 1869 to date.

PLUMBING AND INSPECTION. (See Table No. 18.)

Sixty-two (62) plumbers were granted licenses during the year, and 1,965 permits were issued to them to do work in connection with the introduction and extension of water services.

In addition to the inspection and examination of all the work done by licensed plumbers, there were 1,773 special inspections, of which 431 were on high service, 316 on low service and 1,026 meter consumers. These inspections were made for the purpose of adjusting rates.

Table No. 18 shows the character and number of hose violations reported to this department during the past season; also comparative statements for years 1894 to 1904, inclusive. This table also shows the number of permits issued to plumbers since 1884.

Respectfully submitted,
JOHN CAULFIELD,
Secretary.

TABLE NO. 1.

TRIAL BALANCE TO JANUARY 1, 1905.

	Dr.	Cr.
St. Paul Water Works (original purchase)..	$510,000.00	
Bond account		$2,367,000.00
General water receipts		3,568,306.01
Miscellaneous		341,939.44
Connections (services)	26,049.77	
Extension account	2,229,557.25	
General maintenance	768,318.05	
Repairs in city	88,614.39	
Meter account	146,500.13	
Construction	1,417,806.00	
Interest	2,194,024.90	
General water receipts (hydrant account)...		137,663.19
Sinking fund investments	694,217.30	
Sinking fund	376.31	
Sinking fund earnings		182,430.42
Shutting off and turning on water		2,806.00
Frontage tax		1,489,597.61
Bank of Minnesota	93.53	
City treasurer	3,433.64	
Repairs outside of city	13,737.31	
Rent account		1,626.40
Frontage tax (penalty and interest account).		1,359.51
	$8,092,728.58	$8,092,728.58

TABLE NO. 2.

RECEIPTS AND DISBURSEMENTS FOR YEAR ENDING DEC. 31, 1904.

Balance			$6,201.75
General water receipts, high service	$54,465.55		
General water receipts, low service	35,117.17		
General water receipts, meters	136,478.34		
		$226,061.06	
Miscellaneous receipts, builders	$1,670.67		
Miscellaneous receipts, flushing sewers	1,082.41		
Miscellaneous receipts, filling cisterns	188.50		
		2,941.58	
Connections—Services		29,057.19	
Shutting off and turning on water		145.00	
Extension		2,427.49	
Frontage tax		28,814.37	
Sinking fund earnings		27,088.30	
Sinking fund		46,742.89	
Meter		2,343.19	
Repairs		208.15	
Frontage tax—Penalty and interest account		760.78	
General maintenance account		52.20	
Construction (new supply)		3.75	
General water receipts, hydrant account		16,000.00	
Sinking fund investments		5,042.50	
Rents		165.00	
			387,853.45
Total receipts			$394,055.20

DISBURSEMENTS.

General Maintenance—			
Salaries	$41,302.36		
Stationery and printing	2,440.78		
Miscellaneous	1,601.82		
Labor	3,279.75		
Material	8,779.36		
Stable—Feed	525.96		
Stable—Repairs	296.60		
		$58,226.63	
Connections—			
Labor	$31,508.47		
Pipe	8,212.12		
Brass goods and stop boxes	3,790.38		
Tools and miscellaneous	898.80		
		44,409.77	
Repairs—			
Hydrants—Labor	$3,297.36		
Hydrants—Material	257.67		
Valves—Labor	660.27		
Valves—Material	82.52		
Mains—Labor	4,515.77		
Mains—Material	1,098.42		
		9,912.01	
Meters—			
Labor and material	$8,719.60		
Freight and meters	6,833.44		
		15,553.04	
Extensions—			
Pipe and special castings	$26,980.73		
Labor and contracts	26,526.43		
Tools and repairs of same	1,176.01		
Advertising	83.06		
Fire hydrants	2,110.00		
Valves and valve boxes	1,611.82		
Lead and Hemp Packing	1,918.81		
Lumber and material	728.20		
Miscellaneous	17.40		
		61,152.46	

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McCARRON LAKE PUMPING STATION—ST. PAUL WATER-WORKS.

TABLE NO. 2—Continued.

Construction—New Supply—			
Labor and contracts	$3,125.35		
Tools and repairs of same	131.05		
Lumber and material	660.09		
Engineering and right of way	5,925.94		
Miscellaneous and building account	94.01		
		9,936.44	
Interest		109,990.00	
Refunded frontage tax		73.10	
Sinking fund		32,130.80	
Sinking fund earnings		2,425.59	
Bond account		9,000.00	
Sinking fund investments		35,317.30	
Repairs outside of city		2,400.89	
Total disbursements			390,528.03
Balance			$3,527.17

TABLE NO. 3.

RECEIPTS AND DISBURSEMENTS FROM AUG. 10, 1882, TO DEC. 31, 1904.

General water receipts, high service	$1,010,467.25		
General water receipts, low service	1,175,769.74		
General water receipts, meters	1,382,069.02		
		$3,568,306.01	
Miscellaneous receipts, builders	$45,797.07		
Miscellaneous receipts, water carts	3,796.13		
Miscellaneous receipts, flushing sewers	16,972.73		
Miscellaneous receipts, filling cisterns	22,060.59		
Miscellaneous receipts, spr'kling streets	253,312.92		
		341,939.44	
Connections—Services		437,229.92	
Shutting off and turning on water		2,806.00	
Extension		64,577.89	
Frontage tax		1,492,999.13	
Sinking fund earnings		241,128.35	
Sinking fund		196,957.73	
Meter		13,146.29	
Repairs		3,538.25	
Frontage tax—Penalty and interest account		1,359.51	
General maintenance account		8,615.30	
Construction (new supply)		12,296.24	
Bills payable		653,000.00	
Bonds		2,110,000.00	
Interest		67,964.84	
General water receipts, hydrant account		137,663.19	
Rent account		1,626.40	
Sinking fund investments		53,207.50	
			$9,408,361.99
Total receipts			$9,408,361.99

DISBURSEMENTS.

General Maintenance—			
Salaries	$455,622.73		
Stationery and printing	31,512.08		
Miscellaneous	18,984.81		
Labor	98,368.75		
Material	156,747.58		
Stable—Feed	8,627.99		
Stable—Repairs	7,069.41		
		$776,933.35	
Connections—			
Labor	$278,662.07		
Pipe	114,419.62		
Brass goods and stop boxes	58,074.61		
Tools and miscellaneous	12,123.39		
		463,279.69	

TABLE NO. 3—Continued.

Repairs—			
Hydrants—Labor	$53,445.71		
Hydrants—Material	2,691.38		
Valves—Labor	5,014.61		
Valves—Material	857.41		
Mains—Labor	26,263.93		
Mains—Material	3,879.60		
		92,152.64	
Meters—			
Labor and material	$60,794.19		
Freight and meters	98,852.23		
		159,646.42	
Extensions—			
Pipe and special castings	$1,187,606.18		
Labor and contracts	749,344.71		
Tools and repairs of same	23,519.94		
Advertising	700.78		
Fire hydrants	107,630.64		
Valves	86,256.06		
Lead and hemp packing	75,621.47		
Lumber and material	30,488.11		
Miscellaneous	32,967.25		
		2,294,135.14	
Construction—New Supply—			
Pipe and special castings	$190,423.50		
Labor and contracts	741,281.16		
Tools and repairs of same	8,180.79		
Lumber and material	102,542.46		
Freight	9,734.03		
Engineering and right of way	194,919.24		
Miscellaneous and building account	34,173.61		
Reservoirs	148,847.45		
		1,430,102.24	
Interest		2,261,989.74	
Refunded frontage tax		3,401.52	
Bills payable		653,000.00	
Sinking fund		892,499.04	
Sinking fund earnings		58,697.93	
Sinking fund investments		52,259.80	
Bond account		253,000.00	
Repairs outside of city		13,737.31	
Total disbursements			9,404,834.82
Balance			$3,527.17

TABLE NO. 4.

STATEMENT SHOWING AMOUNT PAID THE CITY TREASURER, FROM JAN. 1, 1904, TO DEC. 31, 1904.

January 1.	Balance in treasury, as per last report		$6,108.22
January.	Cash	$29,857.43	
February.	Cash	18,806.48	
March.	Cash	34,130.38	
April.	Cash	15,023.38	
May.	Cash	34,639.87	
June.	Cash	24,718.77	
July.	Cash	30,133.47	
August.	Cash	33,534.76	
September.	Cash	36,678.33	
October.	Cash	16,257.29	
November.	Cash	15,703.46	
December.	Cash	19,496.14	
			308,979.76
Total			$315,087.98

TABLE NO. 5.

WARRANTS DRAWN ON CITY TREASURER FROM JAN. 1, 1904, TO DEC. 31, 1904, INCLUSIVE.

Jan. 1.	Warrant Nos. 13977 to 13988 inclusive..	$12,330.32		
Jan. 11.	Warrant Nos. 13989 to 14033 inclusive..	4,438.16		
Jan. 20.	Warrant Nos. 14034 to 14035 inclusive..	618.89	$17,387.37	
Feb. 1.	Warrant Nos. 14036 to 14050 inclusive..	$13,214.92		
Feb. 16.	Warrant Nos. 14051 to 14087 inclusive..	654.61	13,869.53	
Mar. 1.	Warrant No. 14088.....	$8,492.05		
Mar. 11.	Warrant Nos. 14089 to 14141 inclusive..	33,847.30	42,339.35	
April 1.	Warrant Nos. 14142 to 14160 inclusive..	$22,784.82		
April 12.	Warrant Nos. 14161 to 14198 inclusive..	5,129.28	27,914.10	
May 2.	Warrant No. 14199.....	$7,819.02		
May 5.	Warrant No. 14200.....	600.00		
May 11.	Warrant Nos. 14201 to 14259 inclusive..	18,948.92	27,367.94	
June 1.	Warrant No. 14260.....	$11,529.13		
June 2.	Warrant Nos. 14261 to 14282 inclusive..	10,350.14		
June 18.	Warrant Nos. 14283 to 14335 inclusive..	7,001.09	28,880.36	
July 1.	Warrant Nos. 14336 to 14337 inclusive..	$13,894.71		
July 8.	Warrant Nos. 14338 to 14351 inclusive..	13,728.43		
July 12.	Warrant Nos. 14352 to 14397 inclusive..	1,184.16	28,807.30	
Aug. 1.	Warrant No. 14398.....	$11,393.29		
Aug. 2.	Warrant Nos. 14399 to 14416 inclusive..	5,437.48		
Aug. 11.	Warrant Nos. 14417 to 14475 inclusive..	15,784.67	32,615.44	
Sept. 1.	Warrant No. 14476.....	$11,302.94		
Sept. 12.	Warrant Nos. 14477 to 14524 inclusive..	27,212.06	38,515.00	
Oct. 1.	Warrant No. 14525.....	$9,919.44		
Oct. 5.	Warrant Nos. 14526 to 14538 inclusive..	1,342.10		
Oct. 13.	Warrant Nos. 14539 to 14594 inclusive..	4,598.30	15,859.84	
Nov. 1.	Warrant No. 14595.....	$8,147.19		
Nov. 4.	Warrant Nos. 14596 to 14618 inclusive..	9,425.62		
Nov. 12.	Warrant Nos. 14619 to 14672 inclusive..	1,583.07	19,155.88	
Dec. 1.	Warrant Nos. 14673 to 14674 inclusive..	$15,183.61		
Dec. 6.	Warrant Nos. 14675 to 14689 inclusive..	1,075.00		
Dec. 14.	Warrant Nos. 14690 to 14740 inclusive..	2,683.62	18,942.23	
				$311,654.34

TABLE

BOND ACCOUNT

Date of Legislative Act Authorizing Issue of Bonds.	Amount of Bonds Authorized.	Date of Bonds Issued.	When Due.	Amount of Bonds Issued.	Rate Per Cent.	Amt. Purchased and Canceled.	Amount Due.
Feb. 10, 1881	$600,000	June 1, 1882	June 1, 1912	$350,000	4	.....	$350,000
		Aug. 1, 1883	Aug. 1, 1913	150,000	5	$4,000	146,000
		April 1, 1884	April 1, 1914	100,000	5	1,000	99,000
Jan. 26, 1883	500,000	April 1, 1884	April 1, 1909	500,000	5	64,000	436,000
Feb. 21, 1885	800,000	April 1, 1885	April 1, 1915	400.00	5	1,000	399,000
Jan. 31, 1887	200,000	May 2, 1887	May 2, 1917	200,000	4½	5,000	195,000
Jan. 31, 1887	160,000	Mar. 1, 1888	Mar. 1, 1918	300,000	4½	.....	300,000
		Jan. 1, 1889	Jan. 1, 1919	100,000	4½	6,000	94,000
		Jan. 2, 1889	Jan. 2, 1919	160,000	4½	12,000	148,000
Mar. 29, 1889	300,000	May 1, 1889	May 1, 1919	100,000	4½	.....	100,000
		May 1, 1890	May 1, 1920	100,000	4	.....	100,000
				$2,460,000	.....	$93,000	$2,367,000

STATEMENT OF CITY BONDS ISSUED FOR WATER WORKS

When Purchased.	Date of Issue.	When Due.	Rate of Interest.
March 15, 1900.....	April 1, 1884.....	April 1, 1909.....	5 per cent
March 27, 1900.....	Aug. 1, 1883.....	Aug. 1, 1913.....	5 per cent
March 27, 1900.....	Jan. 2, 1889.....	Jan. 2, 1919.....	4½ per cent
Oct. 20, 1900.....	Jan. 2, 1889.....	Jan. 2, 1919.....	4½ per cent
Dec. 18, 1900.....	Jan. 1, 1889.....	Jan. 1, 1919.....	4½ per cent
Aug. 22, 1901.....	Jan. 2, 1889.....	Jan. 2, 1919.....	4½ per cent
Aug. 22, 1901.....	Jan. 1, 1889.....	Jan. 1, 1919.....	4½ per cent
Nov. 18, 1901.....	April 1, 1884.....	April 1, 1909.....	5 per cent
May 20, 1902.....	April 1, 1884.....	April 1, 1909.....	5 per cent
April 8, 1903.....	May 2, 1887.....	May 2, 1917.....	4½ per cent
April 8, 1903.....	Jan. 1, 1889.....	Jan. 1, 1919.....	4½ per cent
Oct. 20, 1903.....	Aug. 1, 1883.....	Aug. 1, 1913.....	5 per cent
April 15, 1904.....	April 1, 1884.....	April 1, 1909.....	5 per cent
Aug. 30, 1904.....	April 1, 1884.....	April 1, 1914.....	5 per cent
Sept. 8, 1904.....	Aug. 1, 1883.....	Aug. 1, 1913.....	5 per cent
Dec. 23, 1904.....	April 1, 1885.....	April 1, 1915.....	5 per cent

NO. 6.

JANUARY 1, 1905

Interest Payable.												Total Annual Interest.
Dec. 1.	Jan. 2.	Feb. 1.	Mar. 2.	Apr. 1.	May 2.	June 1.	July 2.	Aug. 1.	Sept. 1.	Oct. 1.	Nov. 2.	
$7,000	.....	.....	.....	.....	.....	$7,000	.....	.....	.....	.....	.....	$14,000
.....	.....	$3,650	.....	.....	.....	.....	.....	$3,650	.....	.....	.....	7,300
.....	.....	.....	.....	$2,475	.....	.....	.....	.....	.....	$2,475	.....	4,950
.....	.....	.....	.....	10,900	.....	.....	.....	.....	.....	10,900	.....	21,800
.....	.....	.....	.....	9,975	.....	.....	.....	.....	.....	9,975	.....	19,950
.....	.....	.....	.....	.....	$4,387.50	.....	.....	.....	.....	.....	$4,387.50	8,775
.....	.....	.....	$6,750	.....	.....	.....	.....	.....	$6,750	.....	.....	13,500
.....	$2,115	.....	.....	.....	.....	.....	$2,115	.....	.....	.....	.....	4,230
.....	3,330	.....	.....	.....	.....	.....	3,330	.....	.....	.....	.....	6,660
.....	.....	.....	.....	.....	2,250.00	.....	.....	.....	.....	.....	2,250.00	4,500
.....	.....	.....	.....	.....	2,000.00	.....	.....	.....	.....	.....	2,000.00	4,000
$7,000	$5,445	$3,650	$6,750	$23,350	$8,637.50	$7,000	$5,445	$3,650	$6,750	$23,350	$8,637.50	$109,665

PURPOSES, PURCHASED AND CANCELED IN 1900, 1901, 1902, 1903 AND 1904.

No.	Amount Purchased.	Premium Paid.		Accrued Interest.	Total Paid.	From What Fund.	
		Rate.	Amount.			Surplus Earnings.	Sinking Fund.
2	$2,000.00	$113.98	$279.60	$45.48	$2,325.08	$2,325.08	.....
2	2,000.00	120.31	406.20	15.07	2,421.27	2,421.27	.....
3	3,000.00	119.40	582.00	31.44	3,613.44	3,613.44	.....
6	6,000.00	118.93	1,135.80	80.25	7,216.05	.....	$7,216.05
1	1,000.00	118.89	188.90	18.37	1,207.27	.....	1,207.27
3	3,000.00	118.33	549.90	18.50	3,568.40	.....	3,568.40
1	1,000.00	118.33	183.30	6.16	1,189.46	.....	1,189.46
6	6,000.00	112.33	739.80	32.05	6,771.85	.....	6,771.85
50	50,000.00	115.00	5,750.00	342.47	56,092.47	.....	56,092.47
5	5,000.00	113.43	671.50	97.50	5,769.00	.....	5,769.00
4	4,000.00	114.65	586.00	47.50	4,633.50	.....	4,633.50
1	1,000.00	123.75	123.75	10.56	1,134.31	.....	1,134.31
6	6,000.00	106.83	409.80	9.17	6,418.97	.....	6,418.97
1	1,000.00	115.00	115.00	20.80	1,135.80	.....	1,135.80
1	1,000.00	113.75	113.75	4.84	1,118.59	.....	1,118.59
1	1,000.00	114.75	147.50	10.50	1,158.00	.....	1,158.00
93	93,000.00	.....	$11,982.80	$790.66	$105,773.46	$8,359.79	$97,413.67

Amount of annual interest saved by the purchase of the above bonds, $4,535.00.

TABLE NO. 7.

CONTRACTS MADE BY THE BOARD OF WATER COMMISSIONERS FROM JAN. 1, 1904, TO DEC. 31, 1904.

No.	Date.	With Whom and for What Purpose.	Amount of Contract.	Amount Paid.	Balance Due.
	1903.				
1.	Oct. 29.	National Meter Co., New York, water meters	$10,004.05	$7,604.05	$2,400.00
2.	Dec. 29.	The Pioneer Press Co., printing annual report	519.65	519.65	.....
	1904.				
3.	Jan. 4.	Crane & Ordway Co., brass goods and automatic drip valves	2,197.44	2,197.44	.....
4.	Jan. 13.	South Park Foundry & Machine Co., valves	1,092.00	1,092.00	.....
5.	Jan. 13.	South Park Foundry & Machine Co., fire hydrants	2,110.00	2,110.00	.....
6.	Jan. 13.	South Park Foundry & Machine Co., special castings	1,484.22	1,484.22	.....
7.	Jan. 13.	Crane & Ordway Co., valves and service boxes	2,507.82	2,123.82	384.00
8.	Jan. 14.	James Forrestal Co., drayage and teaming	636.76	636.76	.....
9.	Jan. 14.	The Dimmick Pipe Co., cast iron water pipe	23,867.03	23,867.03	.....
10.	Mar. 2.	N. W. Shot & Lead Works, lead pipe and tin	2,826.11	2,826.11	.....
11.	Mar. 2.	N. W. Shot & Lead Works, pig lead	1,816.00	1,816.00	.....
12.	Mar. 2.	S. Swanson, 10-inch well, Vadnais lake	2,008.10	2,008.10	.....
13.	Feb. 13.	Patrick H. Thornton, laying 16-inch pipe, West Seventh street	6,628.66	6,628.66	.....
14.	May 13.	Joseph Dingle, gasoline launch, Vadnais lake	405.00	405.00	.....
15.	July 6.	Crane & Ordway Co., 25 tons ⅝-inch extra strong lead pipe	2,653.20	2,653.20	.....
16.	July 6.	August Lindgren, painting fence around H. S. reservoir	124.00	124.00	.....
17.	July 2.	Youghiogheny & Lehigh Coal Co., coal	3,400.00	1,981.59	1,418.41
18.	July 2.	The Jones & Adams Co., coal and wood	3,900.00	2,029.90	1,870.10
			$68,180.04	$62,107.53	$6,072.51

CONTRACTS MADE PREVIOUS TO DEC. 31, 1903, AND FOR WHICH FINAL SETTLEMENT WAS NOT MADE AT TIME OF LAST REPORT.

No.	Date.	With Whom and for What Purpose.	Am't Due Dec. 31, 1903.	Amount Paid.
	1903.			
1.	Jan. 5.	Joseph N. Forcier, cutting wood at Centerville	$115.30	$115.30
2.	Feb. 5.	Gribben Lumber Co., lumber for meter boxes	50.26	50.26
3.	June 12.	S. W. Vanderwarker & Co., fuel	1,151.61	1,151.61
		Totals	$1,317.17	$1,317.17

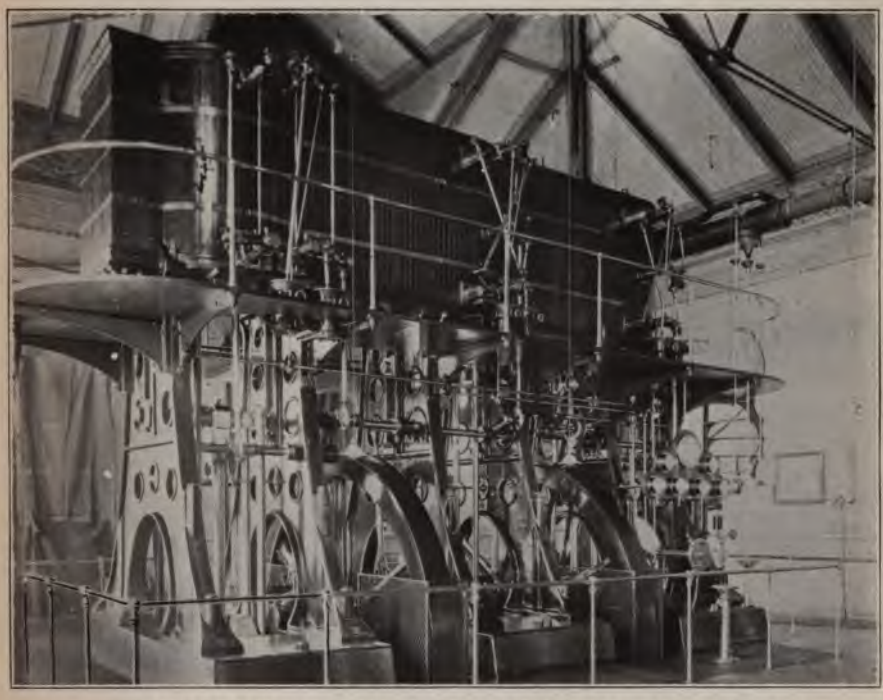
TABLE NO. 8.

STATEMENT SHOWING AMOUNT DUE THE BOARD OF WATER COMMISSIONERS ON DEC. 31, 1904, FROM CITY OF ST. PAUL.

Water for fire purposes from Dec. 1, 1891, to June 1, 1892	$28,401.53	
Water for fire purposes from June 1, 1892, to Dec. 1, 1892	29,229.79	
Water for fire purposes from Dec. 1, 1892, to June 1, 1893	30,546.89	
Water for fire purposes from June 1, 1893, to Dec. 1, 1893	31,607.77	
Water for fire purposes from Dec. 1, 1893, to June 1, 1894	31,773.12	
Water for fire purposes from June 1, 1894, to Dec. 1, 1894	32,307.00	
Water for fire purposes from Dec. 1, 1894, to June 1, 1895	32,700.16	
Water for fire purposes from June 1, 1895, to Dec. 1, 1895	33,204.95	
Water for fire purposes from Dec. 1, 1895, to June 1, 1896	33,341.84	
Water for fire purposes from June 1, 1896, to Dec. 1, 1896	33,509.57	
Water for fire purposes from Dec. 1, 1896, to June 1, 1897	33,663.27	
Water for fire purposes from June 1, 1897, to Dec. 1, 1897	33,823.91	
Water for fire purposes from Dec. 1, 1897, to June 1, 1898	33,978.33	
Water for fire purposes from June 1, 1898, to Dec. 1, 1898	34,184.94	
Water for fire purposes from Dec. 1, 1898, to June 1, 1899	34,325.95	
Water for fire purposes from June 1, 1899, to Dec. 1, 1899	34,571.36	
Water for fire purposes from Dec. 1, 1899, to June 1, 1900	34,740.08	
Water for fire purposes from June 1, 1900, to Dec. 1, 1900	35,029.27	
Water for fire purposes from Dec. 1, 1900, to June 1, 1901	35,251.69	
Water for fire purposes from June 1, 1901, to Dec. 1, 1901	35,490.95	
Water for fire purposes from Dec. 1, 1901, to June 1, 1902	35.830.61	
Water for fire purposes from June 1, 1902, to Dec. 1, 1902	36,283.84	
Water for fire purposes from Dec. 1, 1902, to June 1, 1903	36,649.55	
Water for fire purposes from June 1, 1903, to Dec. 1, 1903	37,185.53	
Water for fire purposes from Dec. 1, 1903, to June 1, 1904	37,537.86	
Water for fire purposes from June 1, 1904, to Dec. 1, 1904	38,138.16	
		$883,307.92
Less amount paid		16,000.00
Balance due		$867,307.92
Premiums received and retained by city on $160,000 of bonds issued in January, 1889, to redeem the bonds of the old St. Paul Water Co. of like amount assumed by the city at the time of the purchase of the works		5,393.77
Relaying of water mains caused by change of grade—		
On Mt. Airy, between Valley and Warren	$248.12	
On Fairview, between Jackson and Mt. Airy	134.25	
On East Sixth, between Maria and Hoffman	399.75	
On East Sixth, between Broadway and Olive	674.37	
On Flandrau at Harvester	65.00	
Changing main at Como bridge	760.58	
Lowering main on Grand avenue	94.00	
Raising main Cedar and Fifth	202.15	
Relaying main under Arcade street bridge	571.08	
		3,149.30

TABLE NO. 8—Continued.

For water for flushing sewers, 1904	$575.70		
For new stand pipes and repairs	89.01		
		664.71	
			$876,515.70
From Board of Education—			
Schools from Oct. 1, 1904, to Jan. 1, 1905			1,076.02
Balance frontage tax assessment for 1896 and prior		$16,477.83	
Balance frontage tax assessment for 1897		5,506.86	
Balance frontage tax assessment for 1898		6,011.26	
Balance frontage tax assessment for 1899		304.91	
Balance frontage tax assessment for 1900		2,431.36	
Balance frontage tax assessment for 1901		2,800.46	
Balance frontage tax assessment for 1902		1,242.81	
Balance frontage tax assessment for 1903		5,146.21	
For frontage tax assessment for 1904		26,810.67	
			66,732.37
From builders			300.00
Total			$944,624.09



SIX MILLION GALLON TRIPLE EXPANSION ALLIS ENGINE,
McCARRON STATION—ST. PAUL WATER-WORKS.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS

TABLE NO. 9.

FRONTAGE TAX ACCOUNT COLLECTIONS—BALANCE DUE JAN. 1, 1905.

RECEIPTS FOR 1904.	1896 and Prior.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	Totals.
January 19	.....	.....	.....	.....	.....	.....	$808.24	.....	.....	$808.24
March 24	.....	$12.12	$1.73	$8.00	$608.59	$40.10	939.03	$840.61	.....	2,450.18
May 26	$4.16	.....	2.00	11.00	143.33	22.05	426.41	2,368.20	.....	2,977.15
June 3	.....	.....	.....	.....	.....	.....	.....	5,000.00	.....	5,000.00
June 15	.....	.....	.....	.....	.....	.....	.....	950.00	.....	950.00
August 2	.....	.....	.....	7.50	.....	563.92	1,253.62	8,510.54	.....	10,335.58
September 9	.....	.....	.....	20.00	.....	.....	284.75	274.79	.....	579.54
September 26	.....	.....	11.24	.27	.....	.....	99.40	191.29	.....	302.20
October 17	12.50	.....	.....	14.00	.....	.....	16.50	422.56	.....	465.56
December 6	5.00	.....	.....	.....	.....	4.50	67.22	4,711.71	.....	4,788.43
December 23	.....	.....	24.00	2.00	2.50	.....	38.54	90.45	.....	157.49
Total receipts	$21.66	$12.12	$38.97	$62.77	$754.42	$630.57	$3,933.71	$23,360.15	.....	$28,814.37
Amount due Jan. 1, 1904. as per last report	16,499.49	5,518.98	6,050.23	367.68	3,185.78	3,431.03	5,176.52	28,506.36	.....	68,736.07
Balance due for 1903 and prior	$16,477.83	$5,506.86	$6,011.26	$304.91	$2,431.36	$2,800.46	$1,242.81	$5,146.21	.....	$39,921.70
Amount 1904 assessment collectible in 1905	.....	.....	.....	.....	.....	.....	.....	.....	$26,810.67	26,810.67
Amount due January 1, 1905	.....	.....	.....	.....	.....	.....	.....	.....	.....	$66,732.37
Frontage Tax Penalties and Interest—										
May. 26	$6.93	$1.20	$1.41	$5.25	$47.90	$9.32	$262.44	.....	.....	$334.45
August 2	.....	.....	.....	1.12	.....	84.59	188.04	.....	.....	273.75
September 9 (June and July collections)	.....	.....	.....	32.45	.....	.....	26.62	$5.79	.....	64.86
October 19 (August and September collections)	3.00	.....	2.85	2.59	.....	.....	17.39	15.40	.....	41.23
December 6 (October settlement)	.75	.....	.....	.....	.....	.67	10.08	16.51	.....	28.01
December 23	.....	.....	3.60	.30	.37	.....	5.78	8.43	.....	18.48
Totals	$10.68	$1.20	$7.86	$41.71	$48.27	$94.58	$510.35	$46.13	.....	$760.78

TABLE NO. 10.

Pay Roll for Year, Including Salaries of Officers, Engineers, Firemen, Inspectors and Laborers.			Salaries of Engineers, Firemen and Keepers at the Various Stations.						
MONTH.	Number of Men.	Total Amount of Pay Roll.	McCarron Lake Station.	Vadnais Lake Station.	Baldwin Lake Station.	West St. Paul Station.	Centerville Station.	Reservoir.	Total.
December, 1903...	125	$6,554.00	$489.50	$55.00	$16.50	$126.50	$55.00	$44.00	$786.50
January, 1904....	86	5,978.36	529.66	55.00	16.50	126.50	55.00	44.00	826.66
February, 1904...	215	8,492.05	529.66	55.00	16.50	126.50	55.00	44.00	826.66
March, 1904.....	228	11,666.75	529.66	55.00	16.50	126.50	55.00	44.00	826.66
April, 1904.....	168	7,819.02	529.66	55.00	16.50	126.50	55.00	44.00	826.66
May, 1904.....	224	11,529.13	529.66	55.00	16.50	126.50	55.00	44.00	826.66
June, 1904.....	221	11,611.46	529.66	63.80	16.50	138.60	55.00	44.00	847.56
July, 1904.....	207	11,393.29	529.66	114.40	16.50	126.50	55.00	44.00	886.06
August, 1904.....	191	11,302.94	529.66	121.00	16.50	126.50	55.00	44.00	892.66
September, 1904..	168	9,919.44	529.66	88.00	16.50	159.50	55.00	44.00	892.66
October, 1904.....	128	8,147.19	529.66	55.00	16.50	160.73	55.00	44.00	860.89
November, 1904..	128	8,183.61	529.66	55.00	16.50	126.50	55.00	44.00	826.66
Totals	2,089	$112,597.24	$6,315.76	$827.20	$198.00	$1,597.33	$660.00	$528.00	$10,126.29

TABLE NO. 11.

THE FOLLOWING TABLE SHOWS THE NUMBER OF APPLICATIONS MADE FOR WATER SERVICE ANNUALLY FROM 1869 TO DATE.

Year.	High Service.	Low Service.	Total.
1869	.....	34	
1870	.....	321	
1871	.....	250	
1872	.....	164	
1873	.....	131	
1874	.....	153	
1875	.....	95	
1876	.....	85	
1877	.....	67	
1878	.....	50	
1879	.....	180	
1880	.....	167	
1881	.....	164	
1882	.....	264	
1883	.....	301	
			2,426
1884	164	336	500
1885	644	365	1,009
1886	639	369	1,008
1887	747	325	1,072
1888	812	406	1,218
1889	1,327	491	1,818
1890	1,071	336	1,407
1891	811	264	1,075
1892	671	210	881
1893	474	151	625
1894	363	139	502
1895	390	311	701
1896	384	156	540
1897	332	98	430
1898	401	129	530
1899	503	163	666
1900	480	205	685
1901	588	232	820
1902	592	287	879
1903	732	258	990
1904	856	281	1,137
Totals	12,981	7,938	20,919

Date of Purchase.	Interest Due on Same.							
	ar. 1.	April 2.	May 2.	July 1.	July 15.	Sept. 1.	Oct. 2.	Nov. 2.
Mar. 1, 1897	00.00	.....	.....	.....	.....	$2,000.00	.....	.....
Sept. 1, 1897	00.00	.....	.....	.....	.....	1,000.00	.....	.....
Nov. 3, 1898	.....	.....	$1,750.00	.....	.....	.....	.....	$1,750.00
Nov. 3, 1898	.....	.....	$1,750.00	.....	.....	.....	.....	1,750.00
Nov. 3, 1898	.....	.....	1,050.00	.....	.....	.....	.....	1,050.00
June 17, 1899	.....	.....	2,250.00	.....	.....	.....	.....	2,250.00
Feb. 9, 1900	.....	.....	.....	$1,250.00	.....	.....	.....	.....
Feb. 16, 1900	.....	.....	.....	360.00	.....	.....	.....	.....
Mar. 22, 1901	87.50	.....	.....	.....	.....	787.50	.....	.....
July 23, 1901	.....	.....	.....	90.00	.....	.....	.....	.....
July 23, 1901	.....	.....	.....	120.00	.....	.....	.....	.....
Sept. 26, 1901	.....	.....	.....	.....	$400.00	.....	.....	.....
Feb. 12, 1902	.....	.....	.....	60.00	.....	.....	.....	.....
Aug. 27, 1902	.....	.....	.....	93.00	.....	.....	.....	.....
Aug. 27, 1902	.....	.....	.....	57.00	.....	.....	.....	.....
Nov. 28, 1902	.....	.....	.....	18.00	.....	.....	.....	.....
May 29, 1903	.....	.....	.....	120.00	.....	.....	.....	.....
Feb. 1, 1904	.....	.....	280.00	.....	.....	.....	.....	280.00
Feb. 1, 1904	.....	.....	.....	19.00	.....	.....	.....	.....
Sept. 8, 1904	.....	25.00	.....	.....	.....	.....	$25.00	.....
Dec. 23, 1904	.....	25.00	.....	.....	.....	.....	25.00	.....
Dec. 23, 1904	.....	.....	.....	120.00	.....	.....	.....	.....
Dec. 23, 1904	.....	.....	45.00	.....	.....	.....	.....	45.00
Dec. 23, 1904	.....	.....	.....	48.00	.....	.....	.....	.....
Dec. 23, 1904	.....	.....	.....	20.00	.....	.....	.....	.....
Dec. 23, 1904	.....	.....	.....	20.00	.....	.....	.....	.....
Dec. 23, 1904	.....	.....	.....	9.35	.....	.....	.....	.....
Dec. 27, 1904	.....	.....	.....	60.00	.....	.....	.....	.....
Total	.....	.....	.....	10.00	.....	.....	.....	.....
	87.50	$50.00	$7,125.00	$2,474.35	$400.00	$3,787.50	$50.00	$7,125.00

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TABLE NO. 13.

PUMPING PLANTS—EXPENSE MAINTAINING THE FIVE (5) PUMPING STATIONS AND RESERVOIR.

Station.	Salaries.	Fuel.	Waste and Machine Oil.	Supplies and Repairs.	Kerosene Oil.	Total.
McCarron lake	$6,315.76	$6,687.15	$171.03	$216.08	$12.00	$13,402.02
Baldwin lake	198.00	32.50	.....	56.43	.....	286.93
Vadnais lake	827.20	419.57	37.37	57.29	6.24	1,347.67
West St. Paul	1,597.33	669.45	21.05	164.22	10.25	2,462.30
Centerville	660.00	127.30	.....	109.93	6.00	903.23
Reservoir	528.00	.....	.....	43.51	.....	571.51
Totals	$10,126.29	$7,935.97	$229.45	$647.46	$34.49	$18,973.66

TABLE NO. 14.

METERS IN SERVICE JAN. 1, 1905.

Kind of Meter.	Size.										
	½	⅝	¾	1	1½	2	3	4	6	10	Total.
Columbia	.....	8	...	...	...	...	...	...	...	...	8
Crown	.....	59	11	25	30	9	1	2	...	...	137
Crown "A"	.....	1,833	47	71	34	11	2	2	1	...	2,001
Crown "AA"	.....	551	2	14	4	1	3	...	...	...	575
Empire	7	15	35	31	...	5	...	1	...	...	94
Empire "A"	.....	5	3	4	...	...	...	...	...	...	12
Empire "AA"	.....	1	2	...	...	...	...	...	...	...	3
Empire "AAX"	.....	5	3	1	...	...	...	...	...	...	9
Frost	.....	.....	1	...	...	...	...	...	...	...	1
Gem	.....	.....	...	...	...	...	...	1	...	...	1
Gem "A"	.....	.....	...	...	...	...	...	...	...	1	1
Gem "AA"	.....	.....	...	...	...	...	...	4	1	...	5
Hersey rotary	.....	31	33	31	21	13	2	1	...	...	132
Hersey disc	.....	4	...	...	1	2	...	...	...	...	7
Keystone	.....	1	...	...	...	...	...	...	...	...	1
Lambert	.....	8	1	1	...	...	...	...	...	...	10
Lambert "A"	.....	1	1	...	...	...	...	...	...	...	2
Nash	.....	7	2	2	...	...	...	...	...	...	11
Nash "A"	.....	16	1	...	1	...	...	1	...	...	19
Nash "AA"	.....	62	...	...	...	...	...	...	...	...	62
Nash "AX"	.....	.....	...	...	1	...	...	...	...	...	1
Niagara	.....	300	24	7	2	1	...	...	...	...	334
Pittsburg disc	.....	3,616	54	79	29	16	1	...	...	...	3,795
Thomson	.....	7	1	...	...	...	...	...	...	...	8
Thomson "B"	1	40	13	3	2	2	...	1	...	...	62
Trident	.....	59	1	1	...	...	...	...	...	...	61
Union piston	.....	.....	1	...	...	...	...	...	...	...	1
Union rotary	.....	56	23	7	29	5	1	2	1	...	124
Union rotary "A"	.....	.....	21	34	22	11	...	...	...	...	88
Westinghouse	.....	1	...	4	1	1	...	...	...	...	7
Worthington, improved	.....	78	87	29	33	7	4	1	...	...	239
Worthington, old style	.....	4	13	7	7	1	...	...	...	...	32
Totals	8	6,768	380	351	217	85	14	16	3	1	7,843

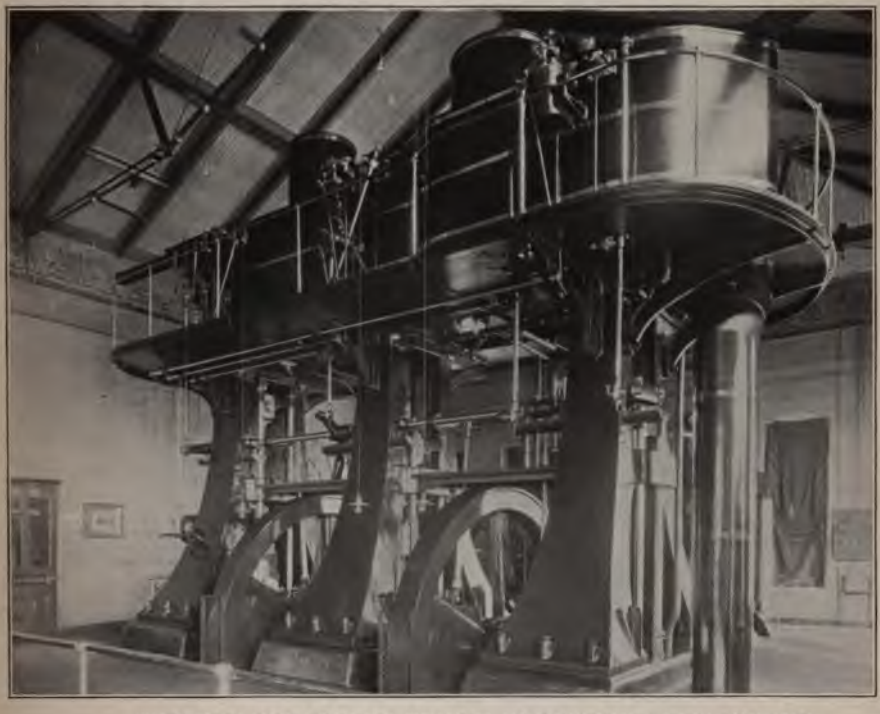
TABLE NO. 15.

SHUTTING OFF AND TURNING ON WATER FROM JAN. 1, 1904, TO JAN. 1, 1905.

	High Service.	Low Service.	Total.
Shut off for repairs	441	375	816
Shut off for non-payment	242	122	364
Shut off for vacant premises	446	256	702
Shut off for violation of rules	.....	3	3
Totals	1,129	756	1,885
Turned on old services	999	636	1,635
Turned on new services	785	290	1,075
Turned on for builders	.....	.....	30
Totals	1,784	926	2,740

Total services shut off and turned on for year ending:

December 1, 1884	1,014	December 1, 1894	4,932
December 1, 1885	2,311	December 1, 1895	4,696
December 1, 1886	2,384	December 31, 1896	4,373
December 1, 1887	2,541	December 31, 1897	4,435
December 1, 1888	2,833	December 31, 1898	4,170
December 1, 1889	3,978	December 31, 1899	4,697
December 1, 1890	3,919	December 31, 1900	3,979
December 1, 1891	4,743	December 31, 1901	3,988
December 1, 1892	4,470	December 31, 1902	3,763
December 1, 1893	4,477	December 31, 1903	3,713
		December 31, 1904	4,625



TEN MILLION GALLON TRIPLE EXPANSION ALLIS ENGINE,
McCARRON STATION—ST. PAUL WATER-WORKS.

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ASTOR, LENOX AND
TILDEN

TABLE NO. 16.

SHOWING THE DIFFERENT KINDS AND SIZES OF METERS BELONGING TO THE CITY AND PRIVATE PARTIES IN SERVICE AND ON HAND DEC. 31, 1904.

Kind of Meters.	Size in Inches.	Property of City.			Private Property.			Grand Total of Meters in Service.	Grand Total of Meters in Shop.	Grand Total of all Meters.
		In Service.	At Workshop.	Total.	In Service.	At Workshop.	Total.			
Columbia	⅝	8		8				8		8
Crown	4	1		1	1		1	2		2
Crown	3	1		1				1		1
Crown	2	8		8	1		1	9		9
Crown	1½	30		30				30		30
Crown	1	25		25				25		25
Crown	¾	11		11				11		11
Crown	⅝	57		57	2		2	59		59
Crown	⅜		1	1					1	1
Crown A	6				1		1	1		1
Crown A	4				2		2	2		2
Crown A	3				2		2	2		2
Crown A	2	11	1	12				11	1	12
Crown A	1½	33	2	35	1		1	34	2	36
Crown A	1	71	3	74				71	3	74
Crown A	¾	46	5	51	1		1	47	5	52
Crown A	⅝	1832	8	1840	1		1	1833	8	1841
Crown AA	3				3		3	3		3
Crown AA	2				1		1	1		1
Crown AA	1½	4		4				4		4
Crown AA	1	14	1	15				14	1	15
Crown AA	¾				2		2	2		2
Crown AA	⅝	550	12	562	1		1	551	12	563
Empire	4	1		1				1		1
Empire	2	5		5				5		5
Empire	1	31		31				31		31
Empire	¾	35		35				35		35
Empire	⅝	15		15				15		15
Empire	½	7		7				7		7
Empire A	1	4		4				4		4
Empire A	¾	3		3				3		3
Empire A	⅝	5		5				5		5
Empire AA	¾	2	1	3				2	1	3
Empire AA	⅝	1		1				1		1
Empire AAX	1	1		1				1		1
Empire AAX	¾	3		3				3		3
Empire AAX	⅝	5		5				5		5
Frost	¾	1		1				1		1
Gem	4				1		1	1		1
Gem	3		1	1		1	1		2	2
Gem A	10				1		1	1		1
Gem AA	6				1		1	1		1
Gem AA	4				4		4	4		4
Hersey rotary	4				1		1	1		1
Hersey rotary	3	2		2				2		2
Hersey rotary	2	13		13				13		13
Hersey rotary	1½	21	4	25				21	4	25
Hersey rotary	1	31		31				31		31
Hersey rotary	¾	33	2	35				33	2	35
Hersey rotary	⅝	31	7	38				31	7	38
Hersey disc	2	1		1	1		1	2		2
Hersey disc	1½	1		1				1		1
Hersey disc	⅝	4		4				4		4
Keystone	⅝	1		1				1		1
Lambert	1	1		1				1		1
Lambert	¾	1		1				1		1
Lambert	⅝	8		8				8		8

TABLE NO. 16—*Continued.*

Kind of Meters.	Size in Inches.	Property of City.			Private Property.			Grand Total of Meters in Service.	Grand Total of Meters in Shop.	Grand Total of all Meters.
		In Service.	At Workshop	Total.	In Service.	At Workshop.	Total.			
Lambert A.	¾	1		1				1		1
Lambert A.	⅝	1		1				1		1
Nash	1				2		2	2		2
Nash	¾	2		2				2		2
Nash	⅝	7	2	9		1	1	7	3	10
Nash A.	4				1		1	1		1
Nash A.	1½				1		1	1		1
Nash A.	¾	1		1				1		1
Nash A.	⅝	14		14	2		2	16		16
Nash AA.	⅝	62		62				62		62
Nash AX.	1½				1		1	1		1
Niagara	2				1	1	2	1	1	2
Niagara	1½				2		2	2		2
Niagara	1				7		7	7		7
Niagara	¾	1		1	23		23	24		24
Niagara	⅝	293	12	305	7		7	300	12	312
Pittsburg disc.	3	1		1				1		1
Pittsburg disc.	2	16		16				16		16
Pittsburg disc.	1½	29	3	32				29	3	32
Pittsburg disc.	1	79		79				79		79
Pittsburg disc.	¾	54	2	56				54	2	56
Pittsburg disc.	⅝	3612	70	3682	4		4	3616	70	3686
Thomson	¾	1		1				1		1
Thomson	⅝	7		7				7		7
Thomson B.	4				1		1	1		1
Thomson B.	2	1		1	1		1	2		2
Thomson B.	1½	2		2				2		2
Thomson B.	1	3		3				3		3
Thomson B.	¾	12		12	1		1	13		13
Thomson B.	⅝	40		40				40		40
Thomson B.	½	1	1	2				1	1	2
Trident	1	1	1	2				1	1	2
Trident	¾	1		1				1		1
Trident	⅝	59	2	61				59	2	61
Union piston	¾	1		1				1		1
Union rotary	6				1		1	1		1
Union rotary	4	2		2				2		2
Union rotary	3	1		1				1		1
Union rotary	2	5		5				5		5
Union rotary	1½	28		28	1		1	29		29
Union rotary	1	7		7				7		7
Union rotary	¾	23		23				23		23
Union rotary	⅝	56		56				56		56
Union rotary A.	2	11		11				11		11
Union rotary A.	1½	22		22				22		22
Union rotary A.	1	34		34				34		34
Union rotary A.	¾	21		21				21		21
Westinghouse	2	1	1	2				1	1	2
Westinghouse	1½	1		1				1		1
Westinghouse	1	4	1	5				4	1	5
Westinghouse	⅝	1		1				1		1
Worthington, improved	4				1		1	1		1
Worthington, improved	3				4		4	4		4
Worthington, improved	2	2		2	5		5	7		7
Worthington, improved	1½	29	1	30	4		4	33	1	34
Worthington, improved	1	28	1	29	1		1	29	1	30
Worthington, improved	¾	84	1	85	3		3	87	1	88
Worthington, improved	⅝	61	2	63	17		17	78	2	80
Worthington, old style	2	1		1				1		1
Worthington, old style	1½	7		7				7		7
Worthington, old style	1	7		7				7		7
Worthington, old style	¾	13		13				13		13
Worthington, old style	⅝	4		4				4		4
Totals		7724	148	7872	119	3	122	7843	151	7994

TABLE NO. 17.

EXPENSE FOR MAINTAINING PUMPING STATIONS AND RESERVOIR FOR YEARS 1891-2-3-4-5-6-7-8-9-1900-1901-2-3-4.

McCARRON LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	Water Pumped.		Fuel, Coal, Etc.		Daily Increase in Pumping Gallons.
							Annually.	Daily.	Annually.	Daily.	
1891	$3,540.00	$4,702.12	$213.86	$230.66	$38.50	$8,725.14	1,106,034,800	3,030,232	2,134,000	5,845	871,090
1892	3,575.00	5,400.89	302.36	37.82	36.75	9,352.82	1,071,130,320	2,934,603	2,036,734	5,580	.....
1893	3,593.00	5,413.30	279.56	329.46	Electric	9,615.32	1,298,551,200	3,557,674	2,147,888	5,884	623,070
1894	3,706.50	5,012.85	237.99	351.12	5.20	9,313.66	1,300,813,800	3,882,110	2,345,731	6,427	326,000
1895	3,652.00	5,034.79	243.57	269.09	5.20	9,204.65	1,536,912,600	4,210,719	2,536,020	6,948	338,609
1896 (13 months)	3,747.00	5,963.64	292.40	305.74	.....	10,308.78	1,651,524,200	4,160,011	2,751,698	6,915	*50,708
1897	3,600.00	3,888.07	237.45	101.68	.....	7,827.20	1,280,312,340	3,507,705	2,074,208	5,682	*652,306
1898	3,754.50	2,923.00	293.34	83.14	4.72	7,058.70	1,456,168,200	3,989,501	2,205,128	5,992	482,301
1899	5,480.16	3,845.45	254.76	318.09	4.77	9,903.23	1,458,679,700	3,999,122	2,149,470	5,893	10,112
1900	5,168.34	4,307.46	320.24	334.99	.....	10,131.03	1,447,107,400	3,964,677	2,127,807	5,829	*34,445
1901	5,220.00	4,627.95	270.37	255.43	3.92	10,377.67	1,416,118,500	3,879,776	2,124,125	5,819	*84,901
1902	5,330.00	4,102.59	257.85	318.06	11.05	10,019.55	1,426,965,800	3,909,495	2,223,537	6,091	29,719
1903	5,836.09	7,047.42	321.05	390.48	.....	13,595.04	1,594,882,100	4,369,340	2,567,904	7,040	322,084
1904	6,315.76	6,687.15	171.03	216.08	12.00	13,402.02	1,744,561,100	4,779,619	2,725,184	7,463	410,079

*Decrease.

BALDWIN LAKE STATION.

1891	$1,507.16	$4,998.44	$51.98	$77.39	$22.14	$6,657.11	1,983,034,500	8,077,535	Wood 797¾ Coal 150,325	.....	.....
1892	1,062.08	941.00	56.28	56.12	11.90	2,127.39	1,153,794,000	9,470,266	Wood 576	.....	.....
1893	1,145.66	778.42	45.18	363.99	10.35	2,343.60	1,104,158,600	9,219,623	Wood 461¾	.....	.....
1894	1,245.66	1,182.05	49.80	251.63	10.30	2,739.44	1,449,360,900	9,662,406	Wood 666½	4½	.....
1895	1,450.00	2,524.46	23.77	45.19	27.08	4,070.50	1,914,949,800	8,824,653	Wood 821	4	.....
1896 (13 months)	1,564.70	1,697.88	17.88	14.40	15.93	3,310.79	1,917,058,000	9,271,715	Wood 841¾	4.3	.....
1897	35.00	.....	.....	.....	.....	35.00	.....	.....	.....	.....	.....
1898	116.66	56.00	.....	.....	.....	172.66	.....	.....	.....	.....	.....
1899	120.00	.....	.....	34.60	.....	154.60	.....	.....	.....	.....	.....
1900	120.00	.....	.....	.....	.....	120.00	*8,782,500	.....	4	4	.....
1901	120.00	55.00	.....	30.62	.....	205.62	.....	.....	.....	.....	.....
1902	170.00	.....	.....	20.00	.....	190.00	.....	.....	.....	.....	.....
1903	196.50	52.50	.....	.....	.....	249.00	.....	.....	.....	.....	.....
1904	198.00	32.50	.....	56.43	.....	286.93	.....	.....	.....	.....	.....

*Run only twenty hours for testing.

TABLE NO. 17—Continued.

VADNAIS LAKE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	Water Pumped.		Fuel, Coal, Etc.		Gasoline, Gallons.	
							Annually.	Daily.	Annually.	Daily.	Annually	Daily
1891	$1,100.00	$1,081.68	$50.75	$197.12	$6.36	$2,435.91	207,750,000	.....	246,800	.....	.....	.....
1892	1,020.00	1,905.25	73.71	102.19	25.90	3,127.05	.....	.....	.....	.....	.....	.....
1893	600.00	.....	.....	21.35	.....	621.35	.....	.....	.....	.....	.....	.....
1894	912.50	1,508.99	21.06	216.75	20.60	2,679.90	337,160,000	.....	624,387	.....	.....	.....
1895	848.33	1,105.00	47.50	31.58	11.64	2,044.05	237,043,000	.....	550,000	.....	.....	.....
1896 (13 months)	1,147.48	1,618.77	44.22	38.76	32.52	2,881.75	938,611,850	2,364,262	612,614	.....	.....	.....
1897	754.00	479.83	6.59	46.92	9.81	1,297.15	290,299,356	795,341	195,950	.....	.....	.....
1898	1,006.00	1,049.49	65.82	73.81	18.55	2,213.67	924,765,600	4,509,561	589,300	.....	.....	.....
1899	896.00	776.43	12.18	142.13	16.31	1,843.05	555,596,800	4,982,464	337,050	2,963	.....	.....
1900	786.00	307.30	39.54	167.10	12.50	1,312.44	311,731,000	4,996,349	172,200	2,756	.....	.....
1901	818.00	625.73	38.30	21.04	17.16	1,520.23	493,940,400	5,100,470	263,300	2,780	.....	.....
1902	890.00	874.13	45.95	74.22	4.68	1,888.98	462,741,040	3,596,599	310,160	2,371	.....	.....
1903	853.00	471.99	10.02	62.94	12.36	1,410.31	222,211,712	3,406,607	161,200	2,484	.....	.....
1904	127.20	419.57	37.37	57.29	6.24	1,347.67	266,306,632	3,804,419	180,700	2,608	166,450	9.33

WEST ST. PAUL STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	Water Pumped. Annually.	Water Pumped. Daily.	Fuel, Coal, Etc. Annually.	Fuel, Coal, Etc. Daily.	Gasoline, Gallons. Annually	Gasoline, Gallons. Daily
1893	$1,237.75	$589.63	$29.72	$23.50	$15.10	$1,895.70	10,015,722	27,440	209,043	571	.....	.....
1894	1,320.00	328.96	2.88	28.83	14.20	1,694.87	9,123,480	24,990	169,220	463	.....	.....
1895	1,320.00	299.50	5.27	26.47	9.08	1,660.32	10,520,640	28,848	174,600	479	.....	.....
1896 (13 months).	1,430.00	529.88	4.58	33.37	12.00	2,009.83	13,497,120	33,998	212,200	535	.....	.....
1897	1,320.00	361.22	5.36	42.86	11.60	1,741.04	16,018,200	43,886	229,800	629	.....	.....
1898	1,320.00	355.97	1.69	40.76	9.00	1,727.42	22,668,660	61,654	269,200	742	.....	.....
1899	1,340.00	448.57	13.44	151.43	12.00	1,965.44	18,803,280	51,515	248,216	680	.....	.....
1900	1,375.00	530.76	7.09	52.40	9.88	1,975.13	16,084,108	44,066	224,650	615	.....	.....
1901	1,380.00	561.36	.....	79.90	19.88	2,041.14	17,682,660	48,445	240,800	659	.....	.....
1902	1,438.00	474.30	6.78	54.67	8.00	2,011.75	17,449,927	43,682	225,050	650	.....	.....
1903	1,506.50	740.00	8.61	119.98	8.75	2,383.84	24,090,899	66,002	163,750	820	.....	.....
1904	1,597.33	669.45	21.05	164.22	10.25	2,462.30	22,848,624	62,598	164,200	717	.....	.....

CENTERVILLE STATION.

Year.	Salaries.	Fuel.	Machine Oil and Waste.	Repairs and Supplies.	Kerosene Oil.	Total.	Water Pumped. Annually.	Water Pumped. Daily.	Fuel, Coal, Etc. Annually.	Fuel, Coal, Etc. Daily.	Gasoline, Gallons. Annually	Gasoline, Gallons. Daily
1897	$843.50	$1,764.85	$35.92	$2.58	$9.54	$2,656.39	.....	.....	.....	.....	.....	.....
1898	902.00	12.00	38.58	16.18	9.41	978.17	595,535,200	14,029,638	160¼	4 cords	.....	.....
1899	1,085.75	385.75	71.79	60.12	18.64	1,622.05	1,920,398,000	14,846,597	474½	3½ cords	.....	.....
1900	1,015.50	1,161.95	41.11	97.48	17.64	2,333.68	1,037,764,000	14,659,841	242¾	3.29 cords	.....	.....
1901	1,002.50	1,129.05	26.30	47.76	19.48	2,225.09	1,462,345,200	15,142,410	328	3.4 cords	.....	.....
1902	1,325.31	824.87	45.57	84.92	13.18	2,293.85	2,084,359,800	14,031,905	565	3.87 cords	.....	.....
1903	751.98	412.87	48.28	54.52	6.24	1,273.89	309,437,600	15,492,266	76	3.75 cords	.....	.....
1904	660.00	127.30	.....	109.93	6.00	903.23	.....	Not run during year.				

RESERVOIR.

Year.	Salaries.	Year.	Salaries.	Year.	Salaries.
1891	$405.00	1896 (13 months)	$430.00	1901	$480.00
1892	405.00	1897	405.00	1902	480.00
1893	405.00	1898	465.00	1903	524.00
1894	405.00	1899	480.00	1904	528.00

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TABLE NO. 18.

COMPARATIVE STATEMENT OF HOSE VIOLATIONS FOR 1894-5-6-7-8-9-1900-1901-2-3-4.

Violations.	1894.			1895.			1896.			1897.			1898.			1899.			1900.			1901.			1902.			1903.			1904		
	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.	High.	Low.	Total.
Hose, 1 violation	200	129	329	136	87	223	155	46	201	91	9	100	130	15	145	56	11	67	198	55	253	133	17	150	57	15	72	106	18	124	45	1	46
Hose, 2 violations	28	16	44	5	1	6	10	3	13	1	...	1	5	...	5	...	...	...	3	2	5	4	1	5	...	...	...	...	...	...	...	...	...
Hose, 3 violations	13	7	20	1	...	1	1	1	2	2	...	2	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...
Hose, 4 violations	2	3	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hose, 5 violations	1	2	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hose, 7 violations	2	1	3	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Reel, 6 to 9 p. m., 1 violation	185	50	235	34	...	34	61	4	65	37	1	38	65	1	66	19	4	23	60	11	71	5	1	6	3	...	3	7	4	11	4	...	4
Reel, 6 to 9 p. m., 2 violations	22	14	36	6	...	6	1	...	1	2	...	2	1	...	1	...	...	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...
Reel, 6 to 9 p. m., 3 violations	6	2	8	2	...	2	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Reel, 6 to 9 p. m., 4 violations	2	1	3	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Reel, 6 to 9 p. m., 7 violations	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hose, all day, 1 violation	162	34	196	1	...	1	40	3	43	26	9	35	68	...	68	51	8	59	36	7	43	25	7	32	10	7	17	110	3	113	11	2	13
Hose, all day, 2 violations	23	9	32	1	...	1	...	...	...	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hose, all day, 3 violations	2	4	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Hose, all day, 4 violations	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	648	274	922	188	88	276	269	57	326	163	19	182	269	16	285	126	23	149	300	75	375	168	26	194	70	22	92	223	25	248	60	3	63

NUMBER OF PERMITS ISSUED ANNUALLY TO PLUMBERS SINCE 1884.

1884	718	1891	1,991	1898	1,104
1885	1,454	1892	1,649	1899	1,279
1886	1,497	1893	1,362	1900	1,382
1887	1,610	1894	1,065	1901	1,712
1888	1,707	1895	1,770	1902	1,628
1889	2,424	1896	1,173	1903	1,684
1890	2,182	1897	1,060	1904	1,965

TABLE NO. 19.

STATEMENT SHOWING THE NUMBER MILES OF PIPE LAID ANNUALLY TO DATE, EXPENSE OF SAME, FRONTAGE TAX, ETC.

Date.	Mains Laid.		Expenditure on Account of Laying Mains.	Construction Outside of City.	Annual Maintenance.	No. of Applications for Taps.	Annual Rec'ts from Consumers.	Increase.	Frontage Tax Receipts.	No. of Fire Hydrants in Use.	Frontage Tax Assessments.	Years Frontage Tax has been Paid incl '94.	Years more to Pay on Basis of 10 Years.
	Miles.	Feet.											
To Aug. 10, 1882	23	1,662	.....	.....	.....	2007	.....	.....	.....	188	.....	.....	.....
From Aug. 10, 1882, to Dec. 1, 1882	....	3,793	a$12,300.44	$1,566.80	$1,674.58	118	.....	.....	.....	198	.....	.....	.....
From Dec. 1, 1882, to Dec. 1, 1883	4	4,807	61,003.97	100,021.19	6,854.30	301	.....	.....	.....	236	.....	11	.....
From Dec. 1, 1883, to Dec. 1, 1884	16	1,220	157,189.31	609,686.93	11,473.84	500	.....	.....	.....	315	$12,852.76	10	.....
From Dec. 1, 1884, to Dec. 1, 1885	23	2,583	207,586.90	40,148.36	b19,275.58	1009	.....	.....	$12,269.90	491	20,590.06	9	1
From Dec. 1, 1885, to Dec. 1, 1886	18	3,334	138,694.54	19,657.46	17,976.64	1008	.....	.....	19,538.26	673	33,787.68	8	2
From Dec. 1, 1886, to Dec. 1, 1887	20	2,207	225,443.70	32,975.47	22,806.58	1072	$106,635.23	$12,976.71	32,495.91	868	46,388.88	7	3
From Dec. 1, 1887, to Dec. 1, 1888	28	3,392	288,018.19	97,736.31	23,799.81	1218	112,720.01	6,084.18	43,002.60	1134	58,609.10	6	4
From Dec. 1, 1888, to Dec. 1, 1889	35	4,963	257,680.58	80,690.69	26,122.69	1818	124,920.90	12,200.89	55,066.01	1471	76,706.21	5	5
From Dec. 1, 1889, to Dec. 1, 1890	26	4,085	211,013.64	26,026.29	c36,082.75	1407	138,913.61	13,992.71	73,079.70	1748	99,680.96	4	6
From Dec. 1, 1890, to Dec. 1, 1891	5	3,696	46,029.69	38,937.07	38,473.82	1075	159,561.29	20,648.48	88,987.80	1813	117,947.95	3	7
From Dec. 1, 1891, to Dec. 1, 1892	14	928	e118,343.20	41,327.25	35,349.12	881	171,164.69	11,603.40	112,082.57	1968	123,886.45	2	8
From Dec. 1, 1892, to Dec. 1, 1893	8	1,946	63,325.15	4,590.46	36,404.84	625	177,595.21	6,430.62	107,899.11	2067	135,336.46	1	9
From Dec. 1, 1893, to Dec. 1, 1894	6	646	42,287.17	6,198.62	d39,139.72	502	178,967.32	1,372.11	112,115.05	2131	143,001.73	.....	10
From Dec. 1, 1894, to Dec. 1, 1895	8	13	f81,360.58	24,624.65	39,006.14	701	179,246.52	279.20	147,171.40	2200	125,374.26	.....	.....
From Dec. 1, 1895, to Dec. 31, 1896	3	3,185	h64,925.03	116,564.23	g41,800.24	540	g190,714.78	g11,468.26	123,172.48	2232	114,925.17	.....	.....
From Dec. 31, 1896, to Dec. 31, 1897	2	490	23,305.72	27,885.79	37,105.41	430	170,796.35	119,918.43	106,448.35	2249	104,052.58	.....	.....
From Dec. 31, 1897, to Dec. 31, 1898	2	3,010	19,128.60	54,396.92	38,124.41	530	167,154.27	1 3,642.08	103,927.35	2268	93,075.68	.....	.....
From Dec. 31, 1898, to Dec. 31, 1899	2	4,186	23,831.66	20,338.82	42,922.82	666	167,343.23	188.96	102,548.02	2294	75,882.60	.....	.....
From Dec. 31, 1899, to Dec. 31, 1900	3	4,356	38,888.48	16,693.20	43,507.50	685	180,810.19	13,466.96	78,261.81	2321	56,882.83	.....	.....
From Dec. 31, 1900, to Dec. 31, 1901	3	3,667	34,087.38	13,057.88	47,517.38	820	186,983.30	6,173.11	57,174.72	2346	40,532.23	.....	.....
From Dec. 31, 1901, to Dec. 31, 1902	4	3,131	39,377.45	36,664.62	54,375.81	879	202,905.30	15,822.00	44,072.47	2387	34,982.85	.....	.....
From Dec. 31, 1902, to Dec. 31, 1903	6	4,830	61,400.87	10,166.37	58,886.49	990	215,660.64	12,755.34	34,811.25	2455	28,506.36	.....	.....
From Dec. 31, 1903, to Dec. 31, 1904	6	1,536	61,152.46	9,936.44	58,226.63	1137	226,061.06	10,400.42	28,814.37	2519	26,810.67	.....	.....
Totals	277	4,306	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Less relaid and abandoned	8	4,843	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Net amount of mains	268	4,743	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

a This includes relaying 16-inch pipe on Lafayette avenue near Trout Brook, on account of regrading street at an expense of $4,677.97.
b Pumping station established for high service in fall of 1884.
c Pumping station established for well plant at Vadnais lake, also Rice lakes.
d Pumping station established for high service in West St. Paul in fall of 1892.
e This includes laying the 20-inch force main to reservoir.
f This includes laying 9,234 feet of 30-inch supply main on Dale street from reservoir to Dale and Front, at an expense of $38,365.78.
g This is for a period of 13 months.
h This includes laying 7,680 feet of 36-inch cast iron force main from McCarron lake pumping station to high service reservoir, at an expense of $49,347.64.

TABLE NO. 20.

STATEMENT SHOWING NUMBER METERS, CONSUMPTION OF WATER, AMOUNTS RECEIVED FOR WATER AND METER RENTS, AND AVERAGE RATE PER MONTH.

Month.	No. of Meters.	Consumption. Cubic Feet.	Amounts Received for Water.	Amounts Received for Meter Rent.	Aver'ge Rate per 100 Cub. Ft.
1896.					
January	1,155	5,970,603	$4,824.93	$234.00	.08081
February	1,164	6,238,792	5,022.64	235.60	.08083
March	1,224	6,187,889	5,000.19	245.42	.08096
April	1,241	6,453,270	5,212.08	249.48	.08076
May	1,285	6,274,503	5,164.62	255.48	.08231
June	1,309	6,809,003	5,587.64	258.61	.0826
July	1,378	6,523,906	5,387.94	274.81	.08258
August	1,415	6,801,623	5,596.42	274.80	.08228
September	1,489	7,892,095	6,305.34	289.77	.07989
October	1,515	6,518,949	5,324.12	292.80	.08167
November	1,526	6,541,652	5,309.11	290.25	.0811
December	1,546	5,935,142	4,886.44	291.05	.08233
Totals		78,147,427	$63,621.47	$3,192.07	.08141
1897.					
January	1,594	6,249,691	$5,103.00	$299.19	.081
February	1,601	5,836,416	4,821.99	298.73	.0826
March	1,719	6,123,406	5,011.21	315.12	.0818
April	1,758	6,095,240	5,072.35	322.14	.0832
May	1,821	5,947,842	4,274.06	332.49	.0718
June	1,867	6,298,849	4,464.09	339.41	.0708
July	2,000	6,320,138	4,569.55	360.46	.0721
August	2,059	6,671,269	4,738.88	366.37	.071
September	2,183	6,616,801	4,840.61	389.06	.07315
October	2,262	6,542,878	4,764.48	399.73	.0728
November	2,286	6,394,309	4,620.55	399.97	.07226
December	2,298	6,295,372	4,574.95	402.38	.0726
Totals		75,392,211	$56,855.72	$4,225.05	.0754
1898.					
January	2,380	6,182,474	$4,507.74	$410.23	.0729
February	2,389	6,152,653	4,502.29	412.87	.0731
March	2,568	6,583,278	4,769.19	442.77	.0724
April	2,619	6,313,093	4,721.24	451.35	.0747
May	2,672	6,893,109	5,040.66	462.86	.0731
June	2,756	7,404,121	5,391.83	475.33	.0728
July	2,898	7,320,745	5,500.73	495.65	.0751
August	2,998	7,895,577	5,793.18	507.11	.0733
September	3,186	8,365,497	6,171.40	538.33	.0737
October	3,326	7,610,828	5,591.12	562.18	.0734
November	3,346	7,664,539	5,545.89	563.80	.0723
December	3,355	7,546,785	5,472.34	563.94	.0725
Totals		85,932,699	$63,007.61	$5,886.42	.0732
1899.					
January	3,414	7,442,389	$5,476.60	$570.10	.0735
February	3,419	7,306,418	5,456.61	571.34	.0746
March	3,476	7,962,725	5,863.22	575.23	.0736
April	3,543	7,500,780	5,613.55	585.34	.0748
May	3,590	7,751,683	5,805.65	598.92	.0748
June	3,619	7,683,319	5,727.94	603.29	.0746
July	3,685	8,336,793	6,291.41	616.39	.0742
August	3,745	8,423,218	6,472.18	623.32	.0768
September	3,894	8,126,342	6,112.72	646.79	.0752
October	4,020	7,680,360	5,815.85	666.65	.0757
November	4,043	8,337,560	6,100.93	672.33	.0730
December	4,063	7,702,400	5,780.30	672.07	.0750
Totals		94,253,987	$70,516.96	$7,401.77	.0746

TABLE NO. 20—*Continued.*

Month.	No. of Meters.	Consumption. Cubic Feet.	Amounts Received for Water.	Amounts Received for Meter Rent.	Aver'ge Rate per 100 Cub. Ft.
1900.					
January	4,151	7,574,302	$5,767.33	$683.05	.0761
February	4,174	7,376,481	5,638.34	685.61	.0763
March	4,286	7,741,929	5,916.61	699.99	.0765
April	4,314	8,509,183	6,331.56	713.37	.0745
May	4,366	8,776,266	6,779.70	720.92	.0772
June	4,423	10,129,914	7,829.88	729.32	.0772
July	4,521	9,297,573	7,121.37	745.60	.0765
August	4,559	9,988,059	7,562.38	754.22	.0757
September	4,655	8,442,816	6,600.74	770.29	.0782
October	4,770	8,531,383	6,516.80	787.93	.0763
November	4,789	8,349,575	6,339.47	788.73	.0759
December	4,812	7,932,886	6,107.93	789.49	.0769
Totals		102,650,367	$78,512.11	$8,868.52	.0765
1901.					
January	4,859	8,820,387	$6,623.91	$795.56	.0751
February	4,877	7,988,407	6,101.51	796.22	.0763
March	4,965	8,062,137	6,209.85	810.40	.0770
April	5,011	8,199,123	6,336.16	820.83	.0772
May	5,053	8,636,644	6,773.11	829.76	.0784
June	5,104	9,651,531	7,384.43	836.42	.0765
July	5,209	10,713,805	8,192.86	852.00	.0764
August	5,251	11,066,457	8,547.48	858.58	.0772
September	5,402	9,899,034	7,557.38	884.12	.0763
October	5,525	9,156,338	7,046.44	900.98	.0770
November	5,550	9,142,287	7,005.79	905.01	.0766
December	5,593	10,587,881	7,745.93	910.18	.0732
Totals		111,924,031	$85,524.85	$10,200.06	.0764
1902.					
January	5,650	9,332,056	$7,128.23	$919.33	.0763
February	5,678	9,479,854	7,262.24	921.76	.0766
March	5,781	10,008,025	7,549.36	939.94	.0755
April	5,867	10,277,668	7,782.36	957.42	.0757
May	5,919	10,166,726	7,696.93	969.18	.0757
June	5,968	10,562,100	8,196.24	978.61	.0776
July	6,094	9,944,601	7,777.23	997.78	.0782
August	6,139	10,880,407	8,421.38	1,005.63	.0774
September	6,307	11,310,546	8,612.27	1,032.25	.0761
October	6,392	11,004,650	8,250.10	1,048.96	.0750
November	6,414	11,194,134	8,429.52	1,050.85	.0753
December	6,464	11,702,210	8,686.56	1,055.25	.0742
Totals		125,862,977	$95,792.42	$11,876.96	.0761
1903.					
January	6,503	11,601,077	$8,917.58	$1,063.76	.0769
February	6,515	11,496,841	8,890.70	1,067.65	.0773
March	6,581	12,016,268	9,274.62	1,078.03	.0772
April	6,622	11,881,516	9,231.57	1,083.27	.0776
May	6,654	11,555,946	9,081.68	1,092.87	.0786
June	6,696	12,933,404	10,133.54	1,097.13	.0784
July	6,760	12,133,532	9,636.94	1,108.83	.0794
August	6,800	11,809,957	9,362.41	1,115.55	.0792
September	6,911	12,355,445	9,626.14	1,134.61	.0779
October	7,015	12,381,826	9,718.11	1,150.45	.0784
November	7,056	12,475,311	9,705.29	1,155.48	.0778
December	7,127	12,699,873	9,862.38	1,164.03	.0777
Totals		145,340,996	$113,440.96	$13,311.66	.0780

TABLE NO. 20—*Continued.*

Month.	No. of Meters	Consumption, Cubic Feet.	Amounts Received for Water.	Amounts Received for Meter Rent.	Aver'ge Rate per 100 Cub. Ft.
1904.					
January	7,180	12,937,637	$10,077.92	$1,171.19	.0779
February	7,181	12,582,689	9,864.52	1,169.80	.0784
March	7,226	13,572,945	10,380.34	1,176.88	.0764
April	7,302	12,842,095	10,011.58	1,191.16	.0779
May	7,337	12,602,629	9,930.02	1,197.77	.0788
June	7,388	13,095,289	10,347.25	1,205.95	.0790
July	7,462	12,535,743	9,832.74	1,217.88	.0784
August	7,536	12,483,783	9,912.89	1,230.30	.0794
September	7,635	13,171,166	10,368.53	1,246.15	.0788
October	7,779	12,961,225	10,195.22	1,264.65	.0785
November	7,841	12,806,745	10,107.61	1,273.90	.0789
December	7,909	13,500,300	10,559.44	1,278.40	.0783
Totals		155,112,246	$121,588.06	$14,624.03	.0784

LIST OF VOUCHERS.

JANUARY, 1904.

No. of Voucher.	Name.	Claim.	Amount.
13977	Otto Bremer, city treasurer	Pay roll for December, 1903	$6,554.00
13978	Otto Bremer, city treasurer	Interest due Jan. 1 and 2, 1904	5,445.00
13979	Tierney & Co.	Oats	52.59
13980	McKibbin, Driscoll & Dorsey	Robe	12.00
13981	Math Stein	Horseshoeing	8.00
13982	N. W. Shot & Lead Works	Solder	17.64
13983	R. F. Conway Co.	Repaving pavement	25.04
13984	Chas. E. Green, Anoka	Abstracts	1.50
13985	Jos. N. Forcier	Teaming, board and stabling	73.25
13986	Jos. N. Forcier	Cutting and hauling wood	115.30
13987	Pioneer Press Co.	Plumbers' permit book	10.50
13988	J. G. Duggan	Sharpening tools	15.50
13989	Otto Bremer, city treasurer	Interest due Feb. 1, 1904	3,675.00
13990	Bernheimer Land Co.	Land for right of way	76.00
13991	Pittsburg Meter Co.	Meter fittings	66.30
13992	Mark Conway	Medical services	25.00
13993	John M. Carlson	Tank for cleaning screens	18.12
13994	The Globe Co.	Advertising	74.76
13995	Mitsch Wagon & Carriage Co.	Repairing windlass	8.00
13996	A. Decker & Co.	Hardware	10.85
13997	D. L. Bell	Cement	4.60
13998	St. Paul Electric Co.	Flash lights	5.80
13999	Brown, Treacy & Sperry Co.	Stationery	24.04
14000	J. F. McGuire & Co.	Window brushes	1.00
14001	Olson & Hawkins	Horseshoers	1.50
14002	H. E. Wedelstaedt & Co.	Stationery	2.28
14003	Northwestern Tel. Ex. Co.	To rent of private line, etc.	55.00
14004	G. W. Cunningham & Co.	Bidders' bonds	5.00
14005	Fred Schroeder	Livery	7.00
14006	Foley Bros. & Kelly	Candles and tea lead	19.12
14007	Crane & Ordway Co.	Pipe fittings	2.30
14008	H. P. Rugg & Co.	Pipe fittings	.79
14009	T. L. Blood & Co.	Paint	3.80
14010	Ogden, Merrill & Greer	Lamp fittings	.14
14011	St. Paul Gas Light Co.	Gas for office	10.30
14012	Farwell, Ozmun, Kirk & Co.	Hardware	2.26
14013	R. J. Maybell Stationery Co.	Stationery and printing	11.23
14014	John Fitzgerald, Supt. of workhouse	One dozen parlor brooms	2.25
14015	Gribben Lumber Co.	Lumber	50.26
14016	Chas. Weinhagen & Co.	Job printing	5.50
14017	Arnold Uhler	Sharpening tools	1.60
14018	Estate of Alex. Ramsey	Rent of storage lot	16.67
14019	Pioneer Press Co.	Job printing	59.50
14020	John Martin Lumber Co.	Lumber	19.16
14021	Remington Typewriter Co.	Supplies	4.70
14022	Boeringer & Son	Repairing transit	12.00
14023	Waterous Engine Works	Supplies, gasoline engine	2.90
14024	W. 7th St. Shoeing Co.	Sharpening tools	4.60
14025	Northwestern Tel. Ex. Co.	Repairing private line	6.10
14026	Chas. Quinn	Horseshoeing	3.00
14027	Volkszeitung Printing & Pub. Co.	Advertising	3.42
14028	W. E. Cariveau	Gas fittings	14.75
14029	Tierney & Co.	Bran	1.60
14030	Standard Oil Co.	Oil and gasoline	66.10
14031	St. Paul Machine Works	Machine work	1.21
14032	John Caulfield	Bills paid per receipts attached.	51.35
14033	Tierney & Scheffer	Feed	1.30
14034	John Lund	Services of diver and helper	400.00
14035	So. Park Foundry & Mach. Co.	Special castings and labor	218.89
			$17,387.37

LIST OF VOUCHERS.—*Continued.*

FEBRUARY, 1904.

No. of Voucher.	Name.	Claim	Amount.
14036	Otto Bremer, city treasurer	Pay roll for January	$5,978.36
14037	Otto Bremer, city treasurer	Interest due March 1, 1904	6,800.00
14038	National Meter Co	Meter fittings	12.68
14039	Manzel Bros	Oil pump	35.00
14040	City of Minneapolis	20 days' rent of diving suit	100.00
14041	Pioneer Press Co	Blank books and job printing	224.71
14042	Joseph Horejs	Tile repairs—cement walks	2.88
14043	W. W. Fitzgerald	Recording deeds	1.25
14044	Ryan Drug Co	Soda ash	9.78
14045	P. R. L. Hardenbergh & Co	Sole leather	5.63
14046	N. W. Shot & Lead Works	Solder	16.34
14047	F. W. Luley & Son	Pure tallow	.85
14048	The Minnesota Soap Co	2 pails soap	4.75
14049	Union Water Meter Co	Meter fittings	12.00
14050	J. G. Duggan	Blacksmithing	10.69
14051	Mrs. Jos. N. Forcier	Board and teaming	26.25
14052	St. Paul Gas Light Co	Gas for office	11.60
14053	Diebold Safe & Lock Co	2 doz. compressors for vault	5.00
14054	Union Brass & Metal Mfg. Co	Brass fittings	2.65
14055	Math Stein	Horseshoeing	6.00
14056	Daily News Pub. Co	Advertising	1.50
14057	Volkszeitung Printing & Pub. Co.	Advertising	2.00
14058	Dispatch Printing Co	Stationery and printing	1.80
14059	The Globe Co	Advertising	1.50
14060	Pioneer Press Co	Advertising and job printing	23.05
14061	Adam Decker & Co	Hardware	39.00
14062	Western Supply Co	Steam hose and galvanized pipe	11.50
14063	Chas. Friend & Son	Harness fittings	1.00
14064	Foley Bros. & Kelly	Matches and candles	9.30
14065	H. P. Rugg & Co	Hardware	1.20
14066	R. J. Maybell Stationery Co	Stationery	7.20
14067	Roberts-Goss Co	Steam gauges	4.00
14068	Noyes Bros. & Cutler	Dusters	2.25
14069	Estate of Alex. Ramsey	Rent of storage lot	16.67
14070	Northwestern Tel. Ex. Co	Rent of telephones and repairs	12.10
14071	J. F. McGuire & Co	Tools	16.82
14072	G. W. Cunningham & Co	Printing postals	.90
14073	Callan Printing Co	Job printing	2.00
14074	Fred Schroeder	Livery	7.50
14075	W. E. Cariveau	Tubing mantles	12.35
14076	Brown, Treacy & Sperry Co	Stationery	28.68
14077	Chas. Quinn	Horseshoeing	1.00
14078	Mitsch Wagon & Carriage Co	Blacksmithing	.75
14079	St. Paul Electric Co	Flash lights	3.05
14080	Farwell, Ozmun, Kirk & Co	Rope and hardware	9.55
14081	Standard Oil Co	Oil and gasoline	62.31
14082	John Caulfield	Bills paid per voucher	139.58
14083	Neptune Meter Co	Meter fittings	12.60
14084	National Meter Co	Meter fittings	12.75
14085	F. L. Gregory	Coal	52.00
14086	Northwestern Fuel Co	Coal	101.50
14087	Pittsburg Meter Co	Meter fittings	5.70
			$13,869.52

LIST OF VOUCHERS.—*Continued.*

MARCH, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14088	Otto Bremer, city treasurer	Pay roll for February, 1904	$8,492.05
14089	Otto Bremer, city treasurer	Interest due April 1, 1904	23,550.00
14090	National Meter Co	Estimate No. 1, meters	606.00
14091	So. Park Foundry & Mach. Co	Estimate No. 1, special castings	221.80
14092	So. Park Foundry & Mach. Co	Estimate No. 1, fire hydrants	162.50
14093	N. W. Shot & Lead Works	Pig lead	1,816.00
14094	N. W. Shot & Lead Works	Solder	15.68
14095	The Crane & Ordway Co	Estimate No. 1, brass goods	2,025.75
14096	The Crane & Ordway Co	Meter fittings and tools	16.56
14097	Hersey Mfg. Co	Meter parts	24.00
14098	Mrs. Jos. N. Forcier	Teaming and board for engineers	51.25
14099	Railway Commercial Co	Meter seals	2.75
14100	Holmes & Johnson	Refund on hydrant stream	2.00
14101	Olson & Hawkins	Horseshoeing	2.00
14102	W. E. Cariveau	Gas fittings	2.25
14103	J. G. Duggan	Blacksmithing	76.75
14104	T. K. Einck	Harness fittings	.65
14105	Mitsch Wagon & Carriage Co	Blacksmith work	4.65
14106	Northwestern Stamp Works	Stamps	4.65
14107	Pioneer Press Co	Map mounting, etc	54.00
14108	Tierney & Co	Feed	65.13
14109	Standard Oil Co	Oil and gasoline	73.39
14110	Math Stein	Horseshoeing	4.00
14111	St. Paul Abstract Co	Abstracts	5.95
14112	Waterous Engine Works Co	Soda, spark points, etc	3.50
14113	Kenny Bros	Steam boiler and repairs	72.00
14114	Estate of Alex. Ramsey	Rent of storage lot	16.67
14115	The Globe Co	Advertising	16.41
14116	T. L. Blood & Co	Paint	.68
14117	The Western Supply Co	Pipe fittings	13.53
14118	Farwell, Ozmun, Kirk & Co	Hardware	209.76
14119	Nicols, Dean & Gregg	Machine bolts	1.02
14120	Foley Bros. & Kelly	Star candles	4.80
14121	Robinson & Cary Co	Steel oiler, etc	.65
14122	G. W. Cunningham & Co	Job printing	7.25
14123	Fred Schroeder	Livery	3.00
14124	Chas. Quinn	Livery	4.00
14125	Minnesota Soap Co	Pail soap	2.40
14126	Brown, Treacy & Sperry Co	Stationery	12.38
14127	Callan Printing Co	Job printing	1.40
14128	H. P. Rugg & Co	Pliers	1.80
14129	Remington Typewriter Co	Supplies	1.35
14130	J. F. McGuire & Co	Tools and supplies	32.32
14131	St. Paul Electric Co	Flash electric light	3.20
14132	St. Paul Gas Light Co	Gas light for office	6.00
14133	R. J. Maybell Stationery Co	Stationery	10.90
14134	F. L. Gregory	Coal	144.73
14135	W. Seventh St. Shoeing Co	Horseshoeing	.60
14136	Northwestern Tel. Ex. Co	Rent of telephones	5.00
14137	Pioneer Press Co	Estimate No. 1 and final, printing report	519.65
14138	John Caulfield	Bills paid as per vouchers	119.95
14139	Robt. W. Hunt & Co	Inspecting pipe	29.48
14140	N. W. Shot & Lead Works	Estimate No. 1 and final, lead pipe	2,663.55
14141	S. W. Vanderwarker & Co	Estimate No. 7, coal	1,151.61
			$42,339.35

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LIST OF VOUCHERS.—*Continued.*

APRIL, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14142	Otto Bremer, city treasurer	Pay roll for March, 1904	$11,666.75
14143	N. W. Shot & Lead Works	Estimate No. 2 and final, pig tin	162.56
14144	Estate of Alex. Ramsey	Rent of storage lot	16.67
14145	National Lead Co	Tin pipe	10.15
14146	Chris. Leibel	Wood	32.50
14147	Waterous Engine Works Co	Bolt	1.80
14148	Pioneer Press Co	Hydrant list	15.00
14149	St. Paul Electric Co	Flash light batteries	2.70
14150	John Fitzgerald, Supt	Brooms	7.80
14151	Jos. A. Rogers	Insurance on wood	12.00
14152	G. W. Cunningham & Co	Job printing	76.48
14153	St. Paul Rubber Co	Rubber boots, etc	14.44
14154	City of St. Paul, Engineering Dept.	Crushed stone	3.50
14155	F. L. Gregory	Coal	766.13
14156	Otto Bremer, city treasurer	Interest due May 1, 1904	8,637.50
14157	So. Park Foundry & Mach. Co	Estimate No. 2, special castings	370.97
14158	So. Park Foundry & Mach. Co	Estimate No. 1, valves	841.00
14159	L. J. Hill	Refunded frontage tax	5.97
14160	J. G. Duggan	Blacksmithing	140.90
14161	The Globe Co	Advertising	1.50
14162	Gerten & Koehnen	Repairing buggy	16.50
14163	S. W. Vanderwarker & Co	Wood	67.50
14164	Mahle Wagon Co	Blacksmithing	13.85
14165	J. F. McGuire & Co	Hardware	4.28
14166	Olson & Hawkins	Blacksmithing	1.00
14167	Chas. Quinn	Horseshoeing	1.00
14168	Math Stein	Blacksmithing	4.00
14169	St. Paul Gas Light Co	Gas for office	8.30
14170	T. L. Blood & Co	Paint	3.31
14171	Daily News Publishing Co	Advertising	1.50
14172	Volkszeitung Printing & Pub. Co.	Advertising	1.80
14173	Pioneer Press Co	Advertising	1.80
14174	R. J. Maybell Stationery Co	Blotters	.46
14175	Brown, Treacy & Sperry Co	Stationery	24.95
14176	G. W. Cunningham & Co	Ink	.80
14177	St. Paul Abstract Co	Abstract Jensen land	10.65
14178	Farwell, Ozmun, Kirk & Co	Tools	48.43
14179	Foley Bros. & Kelly	Star candles	18.90
14180	Nicols, Dean & Gregg	Machine bolts	1.17
14181	Crane & Ordway Co	Unions	1.08
14182	Robinson & Cary Co	Diaphragms and gaskets	20.00
14183	Western Supply Co	Pipe fittings	5.38
14184	Mitsch Wagon & Carriage Co	Blacksmithing	1.90
14185	Fred Schroeder	Livery	38.50
14186	Ogden, Merrill & Greer	Lamp wicks	.15
14187	Noyes Bros. & Cutler	Supplies	6.22
14188	Northwestern Tel. Ex. Co	Rent of telephones	5.00
14189	Kenny Bros	Repairing boiler	4.00
14190	Northwestern Fuel Co	Coal	50.00
14191	F. L. Gregory	Coal	312.51
14192	Frank Einck	Harness fittings	2.05
14193	Dispatch Printing Co	Advertising	1.80
14194	W. Seventh St. Sweeping Co	Sharpening tools	1.70
14195	Gribben Lumber Co	Lumber	25.13
14196	Standard Oil Co	Oil and gasoline	91.46
14197	Robert W. Hunt & Co	Inspecting pipe at foundry	80.70
14198	John Caulfield	Land purchased from Olive H. Harmon	4,250.00
			$27,914.10

LIST OF VOUCHERS.—*Continued.*

MAY, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14199	Otto Bremer, city treasurer	Pay roll for April	$7,819.02
14200	John Caulfield	Land purchased from Anna Jensen and husband	600.00
14201	Northwestern Stamp Works	Stamps	1.85
14202	Pittsburg Meter Co	Meter parts	28.80
14203	The Engineering Record	One year subscription to March 31, 1904	3.00
14204	National Meter Co	Meter fittings	22.50
14205	So. Park Foundry & Mach. Co	Estimate No. 2, fire hydrants	455.00
14206	So. Park Foundry & Mach. Co	Special castings	646.42
14207	So. Park Foundry & Mach. Co	Castings for artesian wells, etc.	157.54
14208	Goodyear Rubber Co	Hip rubber boots	94.50
14209	Remington Typewriter Co	1 ream paper	1.20
14210	August Lindgren	Papering house at reservoir	19.50
14211	St. Paul Stone Co	Cement tile	9.00
14212	G. W. Cunningham & Co	Job printing	7.00
14213	St. Croix Lumber Co	Lumber	26.11
14214	Foley Bros. & Kelly	Tea lead and candles	30.21
14215	Hackett, Walther, Gates Hardware Co	Brass wire	2.35
14216	Robinson & Cary Co	Track chisels	18.60
14217	Western Supply Co	Galvanized pipe and fittings	216.16
14218	Mahle Wagon Co	Painting and repairing buggy	26.95
14219	Olson & Hawkins	Horseshoeing	2.00
14220	T. L. Blood & Co	Paint	.65
14221	J. F. McGuire & Co	Hardware	1.20
14222	Nemis & Nemis	Electric wire	2.40
14223	Wm. E. Cariveau	Asbestos covering and piping	13.19
14224	St. Paul Electric Co	Flashlight	3.10
14225	Brown, Treacy & Sperry Co	Stationery	18.72
14226	R. J. Maybell Stationery Co	Stationery	10.85
14227	H. P. Rugg & Co	Rubber gaskets, etc	19.12
14228	St. Paul Gas Light Co	Gas for office	5.00
14229	Northwestern Tel. Ex. Co	Rent of telephones	5.00
14230	John Fitzgerald, Supt	Warehouse brooms	4.43
14231	D. L. Bell	Cement	23.40
14232	M. W. Fitzgerald, Reg. of Deeds	Recording deeds	2.75
14233	Math Stein	Horseshoeing	8.00
14234	H. C. Sinks	Sanitary fluid	1.50
14235	St. Paul Abstract Co	Abstract Harmon land	2.40
14236	Estate of Alex. Ramsey	Rent of storage lot	16.67
14237	Farwell, Ozmun, Kirk & Co	Tools	127.01
14238	Noyes Bros. & Cutler	Feather dusters	3.60
14239	Randall Printing Co	Job printing	4.00
14240	Fred Schroeder	Livery	21.00
14241	Standard Oil Co	Oil and gasoline	52.95
14242	Union Brass & Metal Mfg. Co	Repairing gauge	1.00
14243	Waterous Engine Works Co	Sparker points, etc	2.30
14244	J. G. Duggan	Sharpening tools, etc	50.31
14245	W. Seventh St. Shoeing Co	Sharpening tools, etc	5.14
14246	Arnold Uhler	Sharpening tools, etc	31.10
14247	John Martin Lumber Co	Lumber	5.80
14248	S. W. Vanderwarker & Co	Coal	18.75
14249	The Jones & Adams Co	Coal	51.76
14250	Yough. & Lehigh Coal Co	Coal	52.25
14251	Pioneer Fuel Co	Coal	51.92
14252	John Caulfield	Bills paid per voucher attached	187.43
14253	F. L. Gregory	Coal	324.25
14254	Jas. Forrestal Co	Estimate No. 1, drayage	332.47
14255	The Dimmick Pipe Co	Estimate No. 1, pipe	15,529.83
14256	Chas. Quinn	Horseshoeing	4.00
14257	Robert W. Hunt & Co	Inspecting pipe	140.73
14258	Haas & Wright	Photos	42.60
14259	St. Paul Abstract Co	Continuing abstract	1.65
			$27,367.94

LIST OF VOUCHERS.—*Continued.*

JUNE, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14260	Otto Bremer, city treasurer	Pay roll for May, 1904	$11,529.13
14261	John Caulfield	Bills paid as per vouchers attached	103.97
14262	St. Paul Rubber Co	Rubber boots and hose	14.44
14263	M. W. Fitzgerald, Reg. of Deeds	Recording papers	4.25
14264	Gribben Lumber Co	Meter boxes	25.13
14265	Remington Typewriter Co	Typewriter machine, etc	53.95
14266	Martin Feist	Lunch for men cleaning conduit	7.00
14267	Estate of Alex. Ramsey	Rent of storage lot	16.67
14268	Diebold Safe & Lock Co	Repairs vault	7.70
14269	Haas & Wright	Photo of engine	2.50
14270	Tierney & Co	Oats and bran	68.48
14271	C. S. Silk	One frame	1.32
14272	St. Paul Abstract Co	Abstracts of right of way	86.05
14273	Pioneer Press Co	Blank book	12.50
14274	R. F. Conway Co., account of J. H. Bell	Repairing pavement	68.36
14275	Chas. Fiss	Refunded frontage tax	2.00
14276	Mary Rexeisen	Refunded frontage tax	4.50
14277	N. W. Shot & Lead Works	Lead pipe	237.95
14278	So. Park Foundry & Mach. Co	Estimate No. 3, hydrants	470.00
14279	P. H. Thornton	Estimate No. 1, laying pipe	2,126.70
14280	Waterous Engine Works	Brass tubes, etc	5.67
14281	Jos. N. Forcier	Board and team	31.00
14282	Otto Bremer, city treasurer	Interest on $350,000 W. W. bonds to June 1, 1904	7,000.00
14283	National Meter Co	Estimate No. 2, meters	3,505.30
14284	Crane & Ordway Co	Estimate No. 1, valve and service boxes	1,968.36
14285	Minn. Mut. Telephone & Tel. Co.	Rent of telephones, Centerville	12.00
14286	St. Paul Gas Light Co	Gas for office	4.20
14287	Brown, Treacy & Sperry Co	Stationery	12.79
14288	G. W. Cunningham & Co	Stationery	1.25
14289	Callan Printing Co	Job printing	4.60
14290	Volkszeitung Printing & Pub. Co.	Advertising	1.30
14291	Pioneer Press Co	Job printing and advertising	42.95
14292	Daily News Publishing Co	Advertising	1.00
14293	R. J. Maybell Stationery Co	Stationery	11.96
14294	Dispatch Printing Co	Advertising	1.20
14295	The Globe Co	Advertising	1.00
14296	Farwell, Ozmun, Kirk & Co	Tools, dynamite and fuse	193.22
14297	Frenzell Bros	Lunch for Centerville trip	7.60
14298	Foley Bros. & Kelly	Candles and matches	9.30
14299	Frank Einck	Repairing harness	7.40
14300	John M. Carlson	Hanging awning and screens	4.06
14301	Crane & Ordway	Plumbers' tools	.71
14302	Robinson & Cary Co	Tools	5.85
14303	W. Seventh St. Shoeing Co	Sharpening tools	36.77
14304	Gerten & Koehlmen	Repairing buggy	9.50
14305	J. G. Duggan	Blacksmithing	25.65
14306	Mitsch Wagon & Carriage Co	Blacksmithing	46.95
14307	Mahle Wagon Co	Repairing buggy	27.15
14308	Olson & Hawkins	Horseshoeing	2.00
14309	Chas. Quinn	Horseshoeing	4.00
14310	Jno. Martin Lumber Co	Lumber, Baldwin Lake	11.76
14311	J. F. McGuire	Tools	5.22
14312	Noyes Bros. & Cutler	Window glass, watchman's, Lake Vadnais	.30
14313	L. Lamb Lumber Co	Repairing watchman's house, Lake Vadnais	3.20
14314	A. J. Krank	Sharpening lawn mowers, reservoir	2.50

LIST OF VOUCHERS.—*Continued.*

JUNE—Continued.

No. of Voucher.	Name.	Claim.	Amount.
14315	Gribben Lumber Co.	Hydrant drip boxes	20.00
14316	H. P. Rugg & Co.	Lard oil meters	.80
14317	Fred Schroeder	Livery	17.00
14318	St. Paul Foundry Co.	Floor plates, vault	7.98
14319	St. Paul Electric Co.	Flash light batteries	3.35
14320	St. Croix Lumber Co.	Lumber	11.89
14321	St. Paul Stone Co.	Tile for sidewalk repairs	10.00
14322	Math. Stein	Horseshoeing	4.00
14323	Standard Oil Co.	Oil and gasoline	41.27
14324	St. Paul Fire & Marine Ins. Co.	Insurance on buildings	295.20
14325	Arnold Uhler	Sharpening tools	1.30
14326	Boeringer & Son	Mounting weir gauge Vadnais Lake	1.25
14327	D. L. Bell	Cement	16.20
14328	Western Supply Co.	Pipe fittings	24.78
14329	St. Paul & Western Coal Co.	Coal	52.25
14330	F. L. Gregory	Coal	82.73
14331	Northwestern Fuel Co.	Coal	219.24
14332	S. W. Vanderwarker & Co.	Wood	13.25
14333	Jos. Hajek	Overcharge on rock connection.	10.00
14334	Simon L. Good	Overcharge on earth connection	10.00
14335	John Caulfield	Car fare, postage, etc., per voucher	187.55
			$28,880.36

JULY, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14336	Otto Bremer, city treasurer	Pay roll for June, 1904	$11,611.46
14337	P. H. Thornton	Est. No. 2, W. Seventh St. main	2,283.25
14338	Otto Bremer, city treasurer	Interest due July and Aug., 1904	9,120.00
14339	The Dimmick Pipe Co.	Estimate No. 2, pipe	3,579.69
14340	Barber Asphalt Paving Co.	Relaying pavement	645.56
14341	De Coster & Clark	Repairing office chairs	9.00
14342	Kenny Bros.	Repairing boiler	5.00
14343	N. W. Shot & Lead Works	Lead pipe and tin	147.23
14344	Estate of Alex. Ramsey	Rent of storage lot	16.67
14345	Nimis & Nimis	Electric wire	2.40
14346	Brooks Bros.	Lumber, Union Park	6.33
14347	Scribner-Libby Co.	Repairing office roof	40.00
14348	So. Park Foundry & Mach. Co.	Repairing patent sleeve, etc.	5.31
14349	So. Park Foundry & Mach. Co.	Est. No. 4, special castings	128.44
14350	J. G. Duggan	Blacksmithing	20.35
14351	O. F. Mundt & Co.	Repairing office awning	2.45
14352	Paul Deebach	Refunded frontage tax	5.00
14353	H. W. Hanft	Refunded frontage tax	5.00
14354	Thos. Vaughan	Refunded frontage tax	1.88
14355	St. Paul Electric Co.	Flashlight	2.70
14356	S. W. Vanderwarker & Co.	Wood	26.75
14357	John M. Carlson	Tool box	10.09
14358	W. E. Cariveau	Asbestos and mantles	6.09
14359	Farwell, Ozmun, Kirk & Co.	Tools, etc.	93.47

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INTAKE CHAMBER, VADNAIS LAKE—ST. PAUL WATER-WORKS.

LIST OF VOUCHERS.—*Continued.*

JULY—Continued.

No. of Voucher.	Name.	Claim.	Amount.
14360	Standard Oil Co.	Oil and gasoline	26.41
14361	Western Supply Co.	Hose, pipe, fittings, etc.	77.56
14362	Callan Printing Co.	Job printing	1.40
14363	R. J. Maybell Stationery Co.	Stationery	11.84
14364	Diebold Safe & Lock Co.	Yale key	.35
14365	H. P. Rugg & Co.	Waste, etc.	26.03
14366	J. F. McGuire	Screen wire	1.07
14367	F. R. Mann & Son	Light of glass	.30
14368	Nicols, Dean & Gregg	Iron and tools	2.98
14369	Chas. Friend & Son	Dash apron and ankle boots	3.75
14370	Register of Deeds	Recording Lamotte contract	1.50
14371	Phila. & Reading Coal & Iron Co.	Coal	163.21
14372	Prendergast Bros.	Oil pump and strainers	4.25
14373	Schroeder & Dickinson	Cleaning rugs	6.00
14374	Olson & Hawkins	Horseshoeing	1.00
14375	Brown, Treacy & Sperry Co.	Stationery	4.55
14376	Math. Stein	Horseshoeing	6.00
14377	Fred Schroeder	Livery	9.00
14378	Gribben Lumber Co.	Lumber	25.13
14379	Pioneer Press Co.	Blank books	22.25
14380	St. Paul Gas Light Co.	Gas	3.90
14381	Noyes Bros. & Cutler	Supplies	2.57
14382	Northwestern Tel. Ex. Co.	Repairing private line	24.63
14383	So. Park Foundry & Mach. Co.	Stuffing box for Crane attachment	2.00
14384	So. Park Foundry & Mach. Co.	Est. No. 4, fire hydrants	325.00
14385	So. Park Foundry & Mach. Co.	Est. No. 4, special castings	42.98
14386	Arnold Uhler	Sharpening tools	11.10
14387	W. Seventh St. Shoeing Co.	Sharpening tools	12.80
14388	Robinson & Cary Co.	Edson diaphragms	18.00
14389	Mahle Wagon Co.	Two drills	6.08
14390	T. L. Blood & Co.	Asphaltum and oil	4.60
14391	Crane & Ordway Co.	Pipe fittings	4.30
14392	Foley Bros. & Kelly	Candles	4.80
14393	Chas. E. Green, abstracter	Abstracts	58.20
14394	N. W. Shot & Lead Works	Solder	28.33
14395	The Globe Co.	Advertising	18.19
14396	Boeringer & Son	Linen tapes	3.00
14397	John Caulfield	Bills paid per receipts attached.	68.12
			$28,807.30

AUGUST, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14398	Otto Bremer, city treasurer	Pay roll for July, 1904	$11,393.29
14399	Crane & Ordway	Estimate No. 1 and final, lead pipe	2,653.20
14400	Crane & Ordway	Estimate No. 2, valve boxes	155.46
14401	N. W. Shot & Lead Works	Lead pipe and solder	68.00
14402	Tierney & Co.	Oats	82.55
14403	Estate of Alex. Ramsey	Rent of storage lot	16.67
14404	M. W. Fitzgerald, Reg. of Deeds.	Recording plat of right of way.	2.00
14405	Bazille & Partridge	Kalsomining	16.70
14406	So. Park Foundry & Mach. Co.	Est. No. 5, fire hydrants	325.00

LIST OF VOUCHERS.—*Continued.*

AUGUST—Continued.

No. of Voucher.	Name.	Claim.	Amount.
14407	So. Park Foundry & Mach. Co.	Estimate No. 2, valves	120.00
14408	So. Park Foundry & Mach. Co.	Est. No. 6, special castings	11.70
14409	Jos. Dingle	Est. No. 1, launch for Vadnais Lake	405.00
14410	Jos. Dingle	Canvas, cushions, etc., for launch	34.50
14411	F. A. Grace	Refunded on connection	5.85
14412	Mrs. P. E. Egan	Window glass and setting	4.25
14413	Albert Masek	Refunded on connection	7.00
14414	J. G. Duggan	Sharpening tools	26.27
14415	Municipal Journal & Engineer	Sub. one year to June, 1905	3.00
14416	P. H. Thornton	Estimate No. 3, laying pipe on West Seventh street	1,500.33
14417	The Dimmick Pipe Co.	Estimate No. 3, iron pipe	4,757.51
14418	S. Swenson	Estimate No. 1 and final, artesian well, Vadnais Lake	2,008.10
14419	The A. P. Smith Mnfg. Co.	Sleeves and valves	120.00
14420	Pittsburg Meter Co.	Meter fittings	92.04
14421	Robert W. Hunt & Co.	Inspecting pipe	57.21
14422	Allis Chalmers Co.	Rubber valves	13.83
14423	Great Northern Ry. Co.	Repairing tracks Rice street main	6.16
14424	R. J. Maybell Stationery Co.	Stationery	9.47
14425	The Dispatch Printing Co.	Advertising	1.80
14426	The Globe Co.	Advertising	3.00
14427	Volkszeitung Printing & Pub. Co.	Advertising	1.40
14428	The Daily News Pub. Co.	Advertising	2.00
14429	Pioneer Press Co.	Advertising and blank books	14.60
14430	Callan Printing Co.	Printing postals	3.00
14431	Brown, Treacy & Sperry Co.	Stationery	15.27
14432	Crane & Ordway Co.	Pipe fittings	4.16
14433	Robinson & Cary Co.	Steam trap, flue cleaner, etc.	26.87
14434	Farwell, Ozmun, Kirk & Co.	Tools, nails, etc.	142.40
14435	Standard Oil Co.	Oil and gasoline	27.24
14436	Ogden, Merrill & Greer	Globes and lamp wick	1.00
14437	Foley Bros. & Kelly	Candles and matches	9.30
14438	St. Paul Gas Light Co.	Gas for office and electric fans	18.60
14439	Roberts-Goss Co.	Machine work	1.50
14440	J. F. McGuire & Co.	Wire cloth	2.92
14441	H. P. Rugg & Co.	Waste, tools, etc.	11.87
14442	Northwestern Tel. Ex. Co.	Rent and repairs of telephone	14.55
14443	T. L. Blood & Co.	Paint	2.10
14444	Bureau of Engraving	Plate for water supply map	3.50
14445	F. R. Mann & Son	Window glass	.60
14446	D. L. Bell	Cement for repairing sidewalks	16.20
14447	P. R. L. Hardenbergh & Co.	Leather	4.00
14448	Gribben Lumber Co.	Lumber	21.82
14449	Chas. Friend & Son	Harness fittings	2.35
14450	Frank Einck	Repairing harness	1.35
14451	Adam Decker	Hardware	9.20
14452	John M. Carlson	Repairing windows	4.10
14453	Minnesota Soap Co.	Pail soap	2.40
14454	St. Paul Rubber Co.	Men's hip boots	71.04
14455	St. Paul Electric Co.	Flash light batteries and lamps	3.90
14456	Fred Schroeder	Livery	7.00
14457	J. E. Piras	Lettering boat	3.00
14458	Hamm Brewing Co.	Refunded on rock connection	33.05
14459	Western Supply Co.	Pipe fittings	6.42
14460	Nicols, Dean & Gregg	Steel and machine bolts	2.92
14461	Chas. Quinn	Blacksmithing	8.00
14462	Math. Stein	Horseshoeing	4.00
14463	Olson & Hawkins	Horseshoeing	2.00
14464	Mahle Wagon Co.	Repairing and painting buggy	16.75

LIST OF VOUCHERS.—*Continued.*

AUGUST—Continued.

No. of Voucher.	Name.	Claim.	Amount.
14465	Mitsch Wagon & Carriage Co...	Cutting left thread on bolt.....	.60
14466	Arnold Uhler.....	Sharpening tools.....	1.75
14467	W. Seventh St. Shoeing Co.....	Sharpening tools.....	64.45
14468	St. Paul Machine Works.....	Machine work pipe cutter.....	9.48
14469	National Meter Co.....	Meters	180.00
14470	Prendergast Bros.....	Galvanized iron work.....	2.70
14471	Barber Asphalt Paving Co.....	Repairing pavement.....	826.17
14472	Water & Gas Review Pub. Co...	One year subscription, to April, 1905	1.00
14473	John Caulfield.....	Bills paid per receipts attached	152.73
14474	Jas. Forrestal Co.....	Estimate No. 2, hauling.....	204.29
14475	Otto Bremer, city treasurer.....	Interest due Sept. 1, 1904.....	6,750.00
			$32,615.44

SEPTEMBER, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14476	Otto Bremer, city treasurer.....	Pay roll for August, 1904.....	$11,302.94
14477	Otto Bremer, city treasurer.....	Interest due Oct. 1, 1904, on bonds	23,375.00
14478	Farwell, Ozmun, Kirk & Co.....	Tools and hardware.....	215.68
14479	John Martin Lumber Co.....	Lath for house at Vadnais.....	.50
14480	August Michael.....	Erroneous frontage tax.....	4.00
14481	Axel Lindmark.....	Repairing house at Vadnais....	36.00
14482	Noyes Bros. & Cutler.....	Flax seed and supplies.....	4.00
14483	F. L. Gregory.....	Coal	202.02
14484	Chas. Friend & Son.....	Harness fittings.....	7.90
14485	Estate of Alex. Ramsey.....	Rent of storage lot.....	16.67
14486	Math. Stein.....	Horseshoeing	6.00
14487	So. Park Foundry & Mach. Co..	Repairing hydrants	98.30
14488	So. Park Foundry & Mach. Co..	Estimate No. 3, valves.....	59.00
14489	Scott, La Mountain Co.....	Rubber tires office buggy.....	6.95
14490	Standard Oil Co.....	Oil and gasoline.....	32.60
14491	Henry J. Puvogel.....	Refunded on street services....	17.50
14492	Pauline Zakovec.....	Overcharge on supply pipes.....	10.50
14493	Tierney & Co.....	Bran	1.55
14494	Gribben Lumber Co.....	Lumber	45.13
14495	Joseph N. Forcier.....	Meals	6.25
14496	Mitsch Wagon & Carriage Co...	Blacksmithing	2.35
14497	J. G. Duggan.....	Sharpening tools.....	17.55
14498	N. W. Shot & Lead Works.....	Lead pipe and solder.....	165.55
14499	St. Paul Gas Light Co.....	Gas and electric fans.....	13.50
14500	R. J. Maybell Stationery Co.....	Pencils and pens.....	.95
14501	St. Paul Electric Co.....	Flashlight batteries.....	3.75
14502	St. Croix Lumber Co.....	Lumber	1.42
14503	Crane & Ordway Co.....	Pipe fittings.....	3.43
14504	Robinson & Cary Co.....	Graphite and oil.....	1.60
14505	Foley Bros. & Kelly.....	Matches and candles.....	9.30
14506	Western Supply Co.....	Pipe and pipe fittings.....	84.46
14507	Mahle Wagon Co.....	Repairing buggy.....	6.50
14508	T. L. Blood & Co.....	Paint	4.54
14509	F. W. Luley & Son.....	Tallow	1.60
14510	Brown, Treacy & Sperry Co.....	Stationery	4.72

LIST OF VOUCHERS.—*Continued.*

SEPTEMBER—Continued.

No. of Voucher.	Name.	Claim.	Amount.
14511	J. F. McGuire & Co.	Hardware	.55
14512	Remington Typewriter Co.	Paper	1.45
14513	Northwestern Tel. Ex. Co.	Rent and repairs to telephone	14.55
14514	Olson & Hawkins	Horseshoeing	2.00
14515	Martin Feist	Lunch for men cleaning conduit	5.00
14516	Schroeder & Dickinson	Repairing office chair	.50
14517	Fred Schroeder	Livery	11.00
14518	Chas. Quinn	Horseshoeing	2.00
14519	August Lindgren	Estimate No. 1 and final, painting fence	124.00
14520	John Caulfield	Bills paid per attached receipts	72.73
14521	W. Seventh St. Shoeing Co.	Sharpening tools	65.90
14522	Jones & Adams Co.	Coal and wood	1,071.87
14523	Yough. & Lehigh Coal Co.	Coal	920.04
14524	James Forrestal Co.	Relaying pavement	453.70
			$38,515.00

OCTOBER, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14525	Otto Bremer, city treasurer	Pay roll for September, 1904	$9,919.44
14526	P. H. Thornton	Estimate No. 1 and final, laying pipe	622.78
14527	P. H. Thornton, for City of St. Paul	Estimate No. 5 and supplemental to Estimates Nos. 4 & final	32.00
14528	P. H. Thornton, for James Forrestal Co.	Estimate No. 6 and supplemental to Estimates Nos. 4 and 5	63.60
14529	So. Park Foundry & Mach. Co.	Estimate No. 7, special castings	58.41
14530	So. Park Foundry & Mach. Co.	Estimate No. 6, fire hydrants	130.00
14531	So. Park Foundry & Mach. Co.	Cast sleeve for leak in river	144.67
14532	City of Minneapolis, water dept.	Rent of diving suit	105.00
14533	Chas. Wilcox	Rent of house boat to repair main	13.50
14534	John G. Duggan	Blacksmithing	25.20
14535	Watson & Howard	Insurance	4.80
14536	Estate of Alex. Ramsey	Rent of storage lot	16.67
14537	N. W. Shot & Lead Works	Solder	90.47
14538	Thos. McDermott, special atty.	Expenses to Chicago	35.00
14539	National Meter Co., New York	Estimate No. 4, meters	2,700.00
14540	H. G. Perske, Anoka	Recording papers	3.50
14541	Chas. E. Green, Anoka	Continuing abstract	2.25
14542	J. F. Lamotte	Board and fence staples	4.16
14543	Yough. & Lehigh Coal Co.	Coal	563.90
14544	Jones & Adams Co.	Coal and wood	481.24
14545	Chas. S. Quinn	Horseshoeing	4.00
14546	Math. Stein	Horseshoeing	6.00
14547	Olson & Hawkins	Horseshoeing	2.00
14548	The Globe Co.	Advertising	2.25
14549	Volkszeitung Printing & Pub. Co.	Advertising	.90
14550	Callan Printing Co.	Job printing	3.75
14551	Glitz, Coppicus & Co.	Repairing window	.75
14552	Herzog Iron Works	Repairing screens	126.70
14553	Northwestern Tel. Ex. Co.	Repairing private line	62.84

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LIST OF VOUCHERS.—*Continued.*

OCTOBER—Continued.

No. of Voucher.	Name.	Claim.	Amount.
14554	City of St. Paul, engineering department	Inspecting paving repairs	2.75
14555	The Ideal Metallic Packing Co.	Metallic packing	25.65
14556	Frank Einck	Repairing harness	.75
14557	Farwell, Ozmun, Kirk & Co.	Dynamite, nails and tools	30.14
14558	Standard Oil Co.	Oil and gasoline	43.17
14559	Mitsch & Heck Wagon Co.	Repairs river main, etc.	9.10
14560	Fred Schroeder	Livery	5.00
14561	G. W. Cunningham & Co.	Job printing	16.02
14562	Western Supply Co.	Lead pipe fittings, etc.	4.41
14563	H. P. Rugg & Co.	Asbestos	.30
14564	R. J. Maybell Stationery Co.	Stationery	3.66
14565	Foley Bros. & Kelly	Candles and matches	13.30
14566	Crane & Ordway Co.	Estimate No. 2, brass goods	26.82
14567	St. Paul Electric Co.	Flashlight batteries	3.90
14568	Robinson & Cary Co.	Packing	2.18
14569	Crane & Ordway Co.	One R. H. Dil	.79
14570	Gribben Lumber Co.	Lumber	25.13
14571	F. W. Luley & Son	Beef tallow	1.60
14572	D. L. Bell	Cement	16.20
14573	Adam Decker & Co.	Hardware	.75
14574	J. F. McGuire & Co.	Hardware	4.32
14575	Remington Typewriter Co.	Chair back	1.00
14576	Dispatch Printing Co.	Advertising	.90
14577	Nicols, Dean & Gregg	Machine bolts	.84
14578	W. E. Cariveau	Gas mantles	6.00
14579	Daily News Publishing Co.	Advertising	.75
14580	St. Paul Stone Co.	Cement tile	15.00
14581	W. Seventh St. Shoeing Co.	Sharpening tools	14.77
14582	Brown, Treacy & Sperry Co.	Stationery	16.35
14583	St. Paul Gas Light Co.	Gas for office	5.00
14584	Pioneer Press Co.	Advertising	.90
14585	John Caulfield	Bills paid per vouchers attached	126.90
14586	St. Paul Lake Ice Co.	Ice for office, 1904	7.25
14587	Great Northern Ry. Co.	Labor Rice street main	1.84
14588	A. Ambrosini	Hot water meter	12.00
14589	Pratt's Express Co.	Hauling diving suit	6.00
14590	A. F. Collier & D. B. Wagner	Refunded on connection	5.85
14591	Fred Nussbaumer	Refunded frontage tax	4.00
14592	Mrs. K. Ryan, Bloomington, Ill.	Refunded frontage tax	2.00
14593	Barber Asphalt Paving Co.	Relaying paving	168.28
14594	Robert Kiefer	Erroneous frontage tax	2.49
			$15,859.84

NOVEMBER, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14595	Otto Bremer, city treasurer	Pay roll for October, 1904	$8,147.19
14596	Otto Bremer, city treasurer	Interest due Nov. 1, 1904	8,637.50
14597	Pioneer Press Co.	Job printing	17.25
14598	Chas. Belka	Damage in laying main	5.10
14599	Gribben Lumber Co.	Meter boxes	50.26
14600	Waterous Engine Works Co.	Refacing valve and piston pin	2.50
14601	N. W. Shot & Lead Works	Lead pipe, solder, etc.	166.67

LIST OF VOUCHERS.—*Continued.*

NOVEMBER—Continued.

No. of Voucher.	Name.	Claim.	Amount.
14602	National Meter Co.	Estimate No. 5, meters	306.75
14603	Union Water Meter Co.	Meter fittings	30.55
14604	Chas. E. Green, abstracter	Abstracts	4.00
14605	Hays Mnfg. Co.	Corporation taps	2.46
14606	Hicks & Co., G. W. Blood, agt.	Erroneous frontage tax	20.00
14607	Geo. W. Blood	Erroneous frontage tax	15.00
14608	Alcide J. Mollet	Overflow from reservoir	25.00
14609	Lee & Hoff Mnfg. Co.	Tapping plug	2.25
14610	Eureka Stone Co	Cement tile	24.10
14611	Diebold Safe & Lock Co.	Repair door lock office	.75
14612	Jas. Forrestal Co.	Repairing pavement	59.01
14613	J. F. Lamotte	Board of foreman	10.25
14614	J. G. Duggan	Blacksmithing	17.40
14615	Frank Einck	Harness fittings	3.90
14616	Burucker Mnfg. Co.	Gasoline lamp	5.25
14617	Estate of Alex. Ramsey	Rent of lot for storage	16.67
14618	Fire & Water Engineering	One year's subscription	3.00
14619	Jas. Forrestal Co.	Estimate No. 3 and final, drayage	100.00
14620	So. Park Foundry & Mach. Co.	Valves	72.00
14621	So. Park Foundry & Mach. Co.	Estimate No. 7, fire hydrants	242.50
14622	So. Park Foundry & Mach. Co.	Estimate No. 7, special castings	3.50
14623	So. Park Foundry & Mach. Co.	Repairing hydrants	21.60
14624	Crane & Ordway Co.	Estimate No. 3, brass goods	116.55
14625	Crane & Ordway Co.	Pipe fittings	2.80
14626	Chas. Matheis	Cloth window shades	23.75
14627	Geo. J. Grant	Excessive frontage tax	1.26
14628	Fred Schroeder	Livery	20.00
14629	Standard Oil Co.	O and gasoline	39.49
14630	R. J. Maybell Stationery Co.	Stationery	6.16
14631	The Globe Co.	Advertising	1.50
14632	J. A. Tierney & Co.	Bran	1.80
14633	St. Paul Lime & Cement Co.	Sewer pipe	20.68
14634	G. W. Cunningham & Co.	Job printing	5.40
14635	Noyes Bros. & Cutler	Tripoli	.18
14636	J. F. McGuire & Co.	Hardware	8.80
14637	Math. Stein	Horseshoeing	4.00
14638	Pioneer Press Co.	Advertising	1.20
14639	W. E. Cariveau	Gas fittings	8.50
14640	St. Paul Electric Co.	Flashlight batteries	3.10
14641	Callan Printing Co.	Postal cards	1.40
14642	The Julius Peter Co.	Gasoline can	.75
14643	H. P. Rugg & Co.	Gasket packing	1.90
14644	Farwell, Ozmun, Kirk & Co.	Powder, etc.	16.75
14645	Dispatch Printing Co.	Advertising	1.20
14646	D. L. Bell	Cement	16.20
14647	Olson & Hawkins	Blacksmithing	2.00
14648	St. Paul Rubber Co.	Hip rubber boots	75.48
14649	Daily News Publishing Co.	Advertising	1.25
14650	St. Paul Gas Light Co.	Gas for office	5.70
14651	Mahle Wagon Co.	Stop box wrenches	12.00
14652	Remington Typewriter Co.	Note books	.25
14653	Western Supply Co.	Pipe and fittings	82.96
14654	Foley Bros. & Kelly	Star candles	4.80
14655	Pittsburgh Plate Glass Co.	Plate glass	4.88
14656	Brown, Treacy & Sperry Co.	Stationery	11.15
14657	Jones & Adams Co.	Estimate No. 3, fuel	7.50
14658	Chas. Quinn	Horseshoeing	4.00
14659	Robinson & Cary	Rubber packing	7.16
14660	Northwestern Tel. Ex. Co.	Repairing line	23.10
14661	H. Mueller Mnfg. Co.	Extras for tapping machine	51.94
14662	N. W. Shot & Lead Works	Solder and lead pipe	324.02
14663	Otto J. Peterson	Repairing porch 761 Tuscarora	4.75

LIST OF VOUCHERS.—*Continued.*

NOVEMBER—Continued.

No. of Voucher.	Name.	Claim.	Amount.
14664	The Ideal Metallic Packing Co..	Packing	39.19
14665	L. W. Rundlett	Expenses to Peltier Lake	7.85
14666	W. Seventh St. Shoeing Co	Horseshoeing	3.22
14667	Arnold Uhler	Blacksmithing	1.90
14668	Barber Asphalt Paving Co	Repairing asphalt	36.11
14669	Martin Feist	Lunch for men cleaning conduit	5.00
14670	Railway Commercial (Seal) Co..	Meter seals	3.00
14671	Scott, La Mountain Co	Repairing buggy	1.60
14672	John Caulfield	Bills paid as per receipts attached to voucher	119.29
			$19,155.88

DECEMBER, 1904.

No. of Voucher.	Name.	Claim.	Amount.
14673	Otto Bremer, city treasurer	Pay roll for November, 1904	$8,183.61
14674	Otto Bremer, city treasurer	Interest due Dec. 1, 1904	7,000.00
14675	National Meter Co	Estimate No. 6, meters	306.00
14676	C. E. Green, Anoka, Minn	Abstract S. 34, T. 32, R. 22	6.00
14677	G. A. Johnson	Overpaid for street service	8.70
14678	A. L. Drew	Overpaid for street service	3.30
14679	Hurley & Co	Labor	1.05
14680	Northwestern Lime Co	Ruberoid roofing	11.25
14681	Estate of Alex. Ramsey	Rent of storage lot	16.67
14682	St. Paul Electric Co	Flashlight batteries	4.10
14683	Union Brass & Metal Mnfg. Co..	Brass goods	2.70
14684	Northwestern Stamp Works	Repairs on stamp	.50
14685	Pioneer Press Co	Blank books and printing	51.25
14686	Gribben Lumber Co	Lumber	59.11
14687	N. W. Shot & Lead Works	Lead pipe, etc	419.58
14688	Peter Cardinal	Board of M. Shouse, foreman	8.50
14689	Barber Asphalt Paving Co	Repairing pavement	176.29
14690	A. P. Smith Mnfg. Co	Patent sleeve and valve	34.00
14691	Brings & Co	Hay, etc	33.35
14692	H. P. Rugg & Co	White waste	15.50
14693	R. J. Maybell Stationery Co	Stationery	23.39
14694	De Coster & Clark	Covering table	2.75
14695	Callan Printing Co	Job printing	1.40
14696	St. Paul Gas Light Co	Gas for office	6.90
14697	St. Paul Lime & Cement Co	Sewer pipe	22.56
14698	Remington Typewriter Co	Paper	1.00
14699	J. F. McGuire & Co	Hardware	1.00
14700	J. W. Cunningham & Co	Job printing	13.63
14701	Dispatch Printing Co	Advertising	1.50
14702	Adam Decker & Co	Hardware	2.13
14703	D. L. Bell	Cement	16.20
14704	Chas. Quinn	Horseshoeing	2.00
14705	Fred Schroeder	Livery	10.00
14706	Brown, Treacy & Sperry Co	Stationery	17.02
14707	J. M. Carlson	Putting up storm sashes	3.60
14708	Pioneer Press Co	Advertising	1.20
14709	Math. Stein	Horseshoeing	6.00
14710	W. H. Bromley	Livery	4.00

LIST OF VOUCHERS.—*Continued.*

DECEMBER—Continued.

No. of Voucher.	Name.	Claim.	Amount.
14711	Farwell, Ozmun, Kirk & Co.	Hardware	22.55
14712	J. G. Duggan	Blacksmithing	17.30
14713	Arnold Uhler	Blacksmithing	6.30
14714	W. Seventh St. Shoeing Co.	Sharpening tools	7.12
14715	Wm. J. Work	Window shade adjusters	13.75
14716	Youghiogheny & Lehigh Coal Co.	Estimate No. 3, fuel	497.65
14717	Jones & Adams Co.	Estimate No. 3, fuel	476.79
14718	Crane & Ordway Co.	Brass goods	28.32
14719	Crane & Ordway Co.	Tools	.90
14720	Boeringer & Son	Blue print paper	.25
14721	Prendergast Bros.	Repairing roof	23.63
14722	St. Paul Stone Co.	Tile for sidewalks	9.60
14723	Robinson & Cary Co.	Steel barrow	6.00
14724	Western Supply Co.	Pipe fittings	92.15
14725	Noyes Bros. & Cutler	Supplies	10.61
14726	T. L. Blood & Co.	Paint	7.45
14727	Foley Bros. & Kelly	Candles and matches	14.10
14728	Standard Oil Co.	Oil and gasoline	59.90
14729	N. W. Shot & Lead Works	Pipe and solder	618.33
14730	R. F. Conway & Co.	Repairing paving	106.95
14731	The Globe Co.	Advertising	1.50
14732	W. H. Bregger	Cleaning chimneys	12.00
14733	Northwestern Tel. Ex. Co.	Rent of telephones	14.00
14734	Louis F. Nienaber	Refund on connection	5.00
14735	Fielding & Shepley	Repairing pavement	46.64
14736	John Caulfield	Bills paid per receipts attached.	145.67
14737	Daily News Publishing Co.	Advertising	1.25
14738	Anna Yanacheck	Repairing windows	1.50
14739	R. F. Conway Co.	Repairing paving	53.37
14740	N. W. Shot & Lead Works	Lead pipe	163.91
			$18,942.23

RECAPITULATION.

January	$17,387.87
February	13,869.53
March	42,339.35
April	27,914.10
May	27,367.94
June	28,880.36
July	28,807.30
August	32,615.44
September	38,515.00
October	15,859.84
November	19,155.88
December	18,942.23
Total	$311,654.34

SUPERINTENDENT'S REPORT.

ST. PAUL, MINN., Jan. 1, 1905.

To the Board of Water Commissioners, St. Paul Minn.,

GENTLEMEN: I herewith submit my annual report of work done by and under your direction for the year 1904.

The amount and character of the work done is shown by the accompanying tables:

19,443 lineal feet of water pipe laid on high service.
8,861 lineal feet of water pipe laid on low service.
2,109 lineal feet of water pipe laid on high service, West Side.

30,413 total lineal feet or 5.7600 miles.

WATER MAINS RELAID AND LOWERED DURING THE YEAR 1904.

Relaying 6-inch main by 16-inch main on Fillmore avenue from S. Wabasha to State street, 2,803 feet, making a grand total of 33,216 lineal feet or 6.2909 miles of pipe laid and relaid.

The number of fire hydrants placed during the year	64
The number of valves placed during the year	61
The number of service pipe connections	1,137
The number of automatic fire extinguishers	6

FIRE HYDRANTS.

There have been 64 hydrants placed during the year, which make a total of 2,519 that are now in service.

There were 5,239 hydrants upon which a repair of some kind was made; 4,623 were affected by frost, requiring the use of steam in 704 of them in order to put them in proper shape. Fifteen hydrants were changed. For location of same see table No. 7.

STREET SPRINKLING STANDPIPES.

There were thirteen (13) new standpipes placed during the year, the total number now in service being 339. There were nineteen (19) Crane

TABLE NO. 1.

PIPE LAID ON HIGH SERVICE DURING THE YEAR 1904.

Date.	Street.	From	6-In.	12-in.	16-In.
May 28.....	Hamline.....	Grand to Summit.....	.....	.....	546
June 10.....	Summit.....	Albert to Snelling.....	.....	2,036	.....
June 14.....	Ashland.....	Snelling to Brimhall.....	318	.....	.....
June 24.....	Capitol boul.	Como to Arch.....	715	.....	.....
June 28.....	Case.....	Forest to Duchess.....	.....	221	.....
June 28.....	Duchess.....	Wells to Case.....	992	.....	.....
June 28.....	Wells.....	Forest to Duchess.....	220	.....	.....
July 13.....	Geranium....	Cortland to Abell.....	638	.....	.....
July 14.....	Gaultier.....	Topping to Atwater.....	330	.....	.....
July 26.....	Albemarle...	Front to Maryland.....	2,568	.....	.....
Aug. 6.....	Hatch.....	Western to Mackubin.....	1,278	.....	.....
Aug. 6.....	Western.....	Front to Hatch.....	.....	.....	310
Aug. 8.....	Farrington..	Van Buren to Blair.....	309	.....	.....
Aug. 13.....	Aurora.....	Avon to Victoria.....	694	.....	.....
Aug. 18.....	Herschel.....	University to Shields.....	585	.....	.....
Aug. 27.....	Ashland.....	Lexington to Griggs.....	1,373	.....	.....
Sept. 12.....	Portland.....	Oxford to Griggs.....	1,979	.....	.....
Sept. 14.....	Grand.....	Snelling to Albert.....	1,971	.....	.....
Sept. 19.....	Hawthorne..	Walsh to Arcade.....	883	.....	.....
Sept. 22.....	Sylvan.....	Sycamore to Acker.....	277	.....	.....
Sept. 22.....	Acker.....	Across Sylvan	48	.....	.....
Sept. 27.....	McLean.....	Maria to Bates.....	296	.....	.....
Sept. 27.....	Bates.....	McLean to Lizzie.....	193	.....	.....
Oct. 26.....	Fairmount...	Milton to Chatsworth.....	663	.....	.....
		Totals	16,330	2,257	856

	Feet.
Total 6-inch pipe.....	16,330
Total 12-inch pipe.....	2,257
Total 16-inch pipe.....	856
Total on High Service.....	19,443 feet, or 3.6824 miles.

TABLE NO. 2.

PIPE LAID ON LOW SERVICE DURING THE YEAR 1904.

Date.	Street.	From	6-In.	12-in.	16-In.
May 31.....	Victoria.....	W. Seventh to Tuscarora.....	.....	700	.....
May 31.....	Bayard.....	Victoria to a point 180 feet w. of Victoria	180	.....	.....
June 8.....	Clifton.....	James to Palace.....	472	.....	.....
June 14.....	Webster.....	Jefferson to Grace.....	338	.....	.....
June 29.....	Michigan....	Richmond to Duke.....	673	.....	.....
Aug. 30.....	Logan.....	W. Seventh to Canton.....	128	.....	.....
Aug. 30.....	Canton.....	Logan to Otto.....	1,068	.....	.....
Aug. 1.....	W. Seventh..	Logan to Elway.....	.....	.....	4,692
		Totals	2,859	700	4,692

	Feet.
Total 6-inch pipe.....	2,859
Total 12-inch pipe.....	700
Total 16-inch pipe.....	4,692
Total on Low Service.....	8,251 feet, or 1.5627 miles.

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TABLE NO. 3.

PIPE LAID ON LOW SERVICE (WEST ST. PAUL) DURING THE YEAR 1904.

Date.	Street.	From	6-In.
May 24.....	Eaton.....	Fillmore to Water.....	307
Sept. 30.....	Livingston..	Fillmore to Water.....	244
Oct. 13.....	Water.....	Across Wabasha	59
		Total	610

Total on Low Service (West St. Paul), 610 feet, or 0.1155 mile.

TABLE NO. 4.

PIPE LAID ON WEST SIDE HIGH SERVICE DURING THE YEAR 1904.

Date.	Street.	From	6-In.
July 2.....	Winslow.....	Morton to Belvidere.....	1,154
July 9.....	Oakdale.....	Belvidere to Annapolis.....	955
		Total	2.109

Total on West Side High Service, 2,109 feet, or 0.3994 mile.

TABLE NO. 5.

LOCATION, SIZE AND NUMBER OF FEET OF PIPE RELAID DURING THE YEAR 1904.

Date.	Service.	Street.	From	16-In.
May 25.....	Low.....	Fillmore.....	S. Wabasha to State, 2,803 feet of 6-inch iron pipe, relaid with 16-inch iron pipe.....	2,803

Total relaid, 2,803 feet, or 0.5309 mile.

TABLE NO. 6.

SUMMARY OF WATER PIPE LAID IN THE CITY OF ST. PAUL, JANUARY 1, 1905.

System.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.	Total Feet.	Total Miles.
High service	39,137	646,094.4	658	138,073.8	92,496.5	36,224	15,317	10,075	9,100	987,175.7	186.9651
Low service	33,707	203,611.5	8,564	52,797.0	48,429.0	8,342	8,765	16,436	18	380,669.5	72.0983
W. S. high service	326	40,133.5	.....	7,530.0	3,950.0	.....	.....	.....	.....	51,939.5	9.8369
Total	73,170	889,839.4	9,222	198,400.8	144,875.5	44,566	24,082	26,511	9,118	1,419,784.7	268.9003

	Feet.
Total 4-inch pipe	73,170.0
Total 6-inch pipe	889,839.4
Total 8-inch pipe	9,222.0
Total 12-inch pipe	198,400.8
Total 16-inch pipe	144,875.5
Total 20-inch pipe	44,566.0
Total 24-inch pipe	24,082.0
Total 30-inch pipe	26,511.0
Total 36-inch pipe	9,118.0
Grand total	1,419,784.7 feet or 268.9003 miles.

TABLE NO. 7.

HYDRANTS PLACED IN 1904.

Hydrant No.	Location.	Service.	Double or Single Steamer	Size of Hydrant Bra'ch
2456	Eaton and Water, s. w. corner	Low	Single	6-inch
877	Fillmore and Starkey, n. w. corner, changed from single to double steamer	Low	Double	6-inch
881	Fillmore and Hubert, n. w corner changed from single to double steamer	Low	Double	6-inch
882	Fillmore and Custer, n. w. corner, changed from single to double steamer	Low	Double	6-inch
849	Fillmore and Robert, n. w. corner, changed from single to double steamer	Low	Double	6-inch
883	Fillmore and Eaton, n. e. corner, changed from single to double steamer	Low	Double	6-inch
884	Fillmore and Eva, n. w. corner, changed from single to double steamer	Low	Double	6-inch
885	Fillmore and Robertson, n. w. corner, changed from single to double steamer	Low	Double	6-inch
805	Fillmore and State, n. w. corner, changed from single to double steamer	Low	Double	6-inch
2457	Fillmore and Robert, n. e. corner	Low	Double	6-inch
2458	Fillmore and Livingston, n. e. corner	Low	Double	6-inch
2459	Hamline and Grand, n. w. corner	High	Single	6-inch
2460	Victoria and Bayard, n. w. corner	Low	Single	6-inch
2461	Bayard, n. s., 160 feet w. of Victoria	Low	Single	6-inch
2462	Summit and Pascal, n. e. corner	High	Single	6-inch
2463	Summit and Warwick, n. e. corner	High	Single	6-inch
2464	Summit and Saratoga, n. e. corner	High	Single	6-inch
2465	Summit and Brimhall, n. e. corner	High	Single	6-inch
2466	Summit and Snelling, n e. corner	High	Single	6-inch
2467	Ashland and Brimhall, n. w corner	High	Single	6-inch
676	Removed to Webster and Grace, s. w. corner.	Low	Single	6-inch
2468	Capitol boulevard and Winter, s. w. corner	High	Single	6-inch
2469	Capitol boulevard and Arch, s. w. corner	High	Single	6-inch
2470	Duchess and Sims, n. e. corner	High	Single	6-inch
2471	Duchess and Wells, n. e. corner	High	Single	6-inch
2472	Michigan and Duke, n. e. corner	Low	Single	6-inch
2473	Winslow and Page, n. w. corner	W. S. high.	Single	6-inch
2474	Winslow and Tyler, n. w. corner	W. S. high.	Single	6-inch
2475	Winslow and Curtice, n. w. corner	W. S. high.	Single	6-inch
2476	Winslow and Belvidere, n. w. corner	W. S. high.	Single	6-inch
2477	Oakdale and Lucy, n. w. corner	W. S. high.	Single	6-inch
2478	Oakdale and Wyoming, n. w. corner	W. S. high.	Single	6-inch
2479	Oakdale and Annapolis, n. w. corner	W. S. high.	Single	6-inch
2480	Geranium and Abell, n. e. corner	High	Single	6-inch
2481	Gaultier and Atwater, n. w. corner	High	Single	6-inch
2482	Albemarle and Hatch, n. w. corner	High	Single	6-inch
2483	Albemarle and Lawson, n. w. corner	High	Single	6-inch
2484	Albemarle and Cook, n. w. corner	High	Single	6-inch
2485	Albemarle and Oliver, n. w. corner	High	Single	6-inch
2486	Albemarle and Geranium, n. w. corner	High	Single	6-inch
2487	Albemarle and Rose, n. w. corner	High	Single	6-inch
2488	Albemarle and Maryland, s. w. corner	High	Single	6-inch
2489	Hatch and Western, n. w corner	High	Single	6-inch
2490	Hatch and Arundel, n. w. corner	High	Single	6-inch
2491	Hatch and Mackubin, n. e. corner	High	Single	6-inch
2492	Farrington and Blair, n. w. corner	High	Single	6-inch
2493	Herschel and Shields, n. w. corner	High	Single	6-inch
2494	W. Seventh and Scheffer, s. e. corner	Low	Single	6-inch
2495	W. Seventh and Otto, s. e. corner	Low	Single	6-inch
2496	W. Seventh bet. Otto and Hathaway s. s.	Low	Single	6-inch
2497	W. Seventh bet. Hathaway and Vista, s. s.	Low	Single	6-inch
2498	W. Seventh and Vista, s. e. corner	Low	Single	6-inch
2499	W. Seventh and Alaska, s. e. corner	Low	Single	6-inch
2500	W. Seventh and Albian, s. e. corner	Low	Single	6-inch
2501	W. Seventh and Elway, s. e. corner	Low	Single	6-inch
2502	E. Seventh, 50 feet of Bradley, n. s.	High	Double	6-inch
2503	Ashland and Dunlap, n. e. corner	High	Single	6-inch

TABLE NO. 7—Continued.

Hydrant No.	Location.	Service.	Double or Single Steamer.	Size of Hydrant Bra'ch.
2504	Ashland and Griggs, n. e. corner	High	Single	6-inch
2505	Canton and Scheffer, n. w. corner	Low	Single	6-inch
2506	Canton and Otto, n. w. corner	Low	Single	6-inch
2507	Portland and Lexington, n. e. corner	High	Single	6-inch
2508	Portland and Dunlap, n. e. corner	High	Single	6-inch
2509	Portland and Griggs, n. e. corner	High	Single	6-inch
2510	Grand and Saratoga, n. w. corner	High	Single	6-inch
2511	Grand and Pascal, n. w. corner	High	Single	6-inch
2512	Grand and Albert, n. w. corner	High	Single	6-inch
2513	Hawthorne and Weide, n. w. corner	High	Single	6-inch
2514	Hawthorne and Arcade, n. w. corner	High	Single	6-inch
2515	Bates and Lizzie, n. w. corner	High	Single	6-inch
2516	Livingston and Water, n. w. corner	Low	Single	6-inch
2517	E. Seventh and Bradley, n. w. corner	High	Double	6-inch
2518	McLean and Bates, s. w. corner	High	Single	6-inch
2519	Fairmount and Chatsworth, n. e. corner	High	Single	6-inch

TABLE NO. 8.

VALVES PLACED IN 1904.

Street.	Service.	Location.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.
Eaton	Low	N. w. cor. Fillmore Ave.		1			
Fillmore	Low	N. e. cor. S. Wabasha St.					1
Fillmore	Low	N. w. cor. S. Robert St.					1
Fillmore	Low	N. w. cor. State St.					1
S. Robert	Low	N. w. cor. Fillmore Av.		1			
S. Robert	Low	S. w. cor. Fillmore Av.		1			
Hamline	High	On branch of hydrant No. 2459		1			
Victoria	Low	N. w. cor. W. Seventh St.				1	
Bayard	Low	N. w. cor. Victoria St.		1			
Summit	High	N. w. cor Pascal Av.				1	
Summit	High	N. e. cor. Snelling Av.				1	
Ashland	High	N. e. cor. Snelling Av.		1			
Capitol boul.	High	S. w. cor. Como Av.		1			
Capitol boul.	High	N. w. cor. Como Av.		1			
Case	High	N. e. cor. Forest St.				1	
Duchess	High	S. e. cor. Case St.		1			
Wells	High	N. e. cor. Forest St.		1			
Michigan	Low	N. e. cor. Colborne St.		1			
Winslow	W. S. H.	S. w. cor. Morton St.		1			
Oakdale	W. S. H.	N. w. cor. Lucy St.		1			
Geranium	High	N. w. cor. Cortland St.		1			
Albemarle	High	N. w. cor. Front St.		1			
Albemarle	High	N. w. cor. Lawson St.		1			
Albemarle	High	N. w. cor. Oliver St.		1			
Albemarle	High	S. w. cor. Maryland St.		1			
Western	High	N. w. cor. Front St.					1
Hatch	High	N. w. cor. Western Av.		1			
Farrington	High	S. w. cor. Como Av.		1			
Aurora	High	N. e. cor. Victoria St.		1			
Herschel	High	S. w. cor. University Av.		1			
Ashland	High	N. e. cor. Lexington Av.		1			
Ashland	High	N. w. cor. Lexington Av.		1			
Canton	Low	S. e. cor. W. Seventh St.		1			
Portland	High	S. e. cor. Lexington Av.		1			
Portland	High	N. w. cor. Lexington Av.		1			
Grand	High	N. w. cor. Pascal Av.		1			
Grand	High	N. e. cor. Snelling Av.		1			
Sylvan	High	S. w. cor. Sycamore St.		1			
Livingston	Low	N. w. cor. Fillmore Av.		1			

TABLE NO. 8—Continued.

Street.	Service.	Location.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.
Water	Low	N. e. cor. S. Wabasha St.		1			
E. Seventh	High	On branch of hydrant No. 2502		1			
E. Seventh	High	On branch of hydrant No. 2517		1			
W. Seventh	Low	S. w. cor. Logan St.					1
W. Seventh	Low	S. w. cor. Otto St.					1
W. Seventh	Low	S. w. cor. May St.					1
W. Seventh	Low	On branch of hydrant No. 2494		1			
W. Seventh	Low	On branch of hydrant No. 2495		1			
W. Seventh	Low	On branch of hydrant No. 2496		1			
W. Seventh	Low	On branch of hydrant No. 2497		1			
W. Seventh	Low	On branch of hydrant No. 2498		1			
W. Seventh	Low	On branch of hydrant No. 2499		1			
W. Seventh	Low	On branch of hydrant No. 2500		1			
W. Seventh	Low	On branch of hydrant No. 2501		1			
Fillmore	Low	On branch of hydrant No. 877		1			
Fillmore	Low	On branch of hydrant No. 881		1			
Fillmore	Low	On branch of hydrant No. 882		1			
Fillmore	Low	On branch of hydrant No. 883		1			
Fillmore	Low	On branch of hydrant No. 884		1			
Fillmore	Low	On branch of hydrant No. 885		1			
Fillmore	Low	On branch of hydrant No. 805		1			
Collins	Low	N. e. cor. De Soto St.		1			
		Totals		50		4	7

Total on High Service	28
Total on Low Service	31
Total on West Side High Service	2
Grand Total	61

TABLE NO. 9.

TOTAL NUMBER OF VALVES ON ALL SYSTEMS JAN. 1, 1905.

Size in Inches.	Low Service.	High Service.	West Side High Service.	Total.
2 inches.....Blow-offs	4	1	.....	5
3 inches.....	16	23	.....	39
4 inches.....	114	119	.....	233
6 inches.....	402	1,038	56	1,586
8 inches.....	33	3	.....	36
12 inches.....	78	148	8	234
16 inches.....	45	71	5	121
20 inches.....	10	33	.....	43
24 inches.....	5	9	.....	14
30 inches.....	5	6	.....	11
36 inches.....	1	5	.....	6
Totals	803	1,456	69	2,328

TABLE NO. 10.

STREET SPRINKLING STANDPIPES PUT IN DURING THE YEAR 1904.

No.	Location.	Measurement of Valves from Standpipes.
327	Iglehart and Sixth.....	24 ft. S.
328	Collins bet. Burr and Beaumont.....	2 ft. 6 in. N.
329	Wheeler and Shields.....	2 ft. 8 in. W.
330	Portland, 100 feet west of Milton.....	2 ft. 2 in. N.
331	W. Seventh and Otto.....	6 ft. 8 in. N.
332	W. Seventh and Rogers.....	6 ft. 3. in. N.
333	W. Seventh and Elway.....	6 ft. N.
334	Moses and Fairfield.....	7 ft. S.
335	Hampden and Ellis.....	27 ft. N.
336	Acker and Jackson.....	26 ft. W.
337	John and Prince.....	18 ft. 5 in. W.
338	Rice and Maryland.....	
339	Edmund and Avon.....	

TABLE NO. 11.

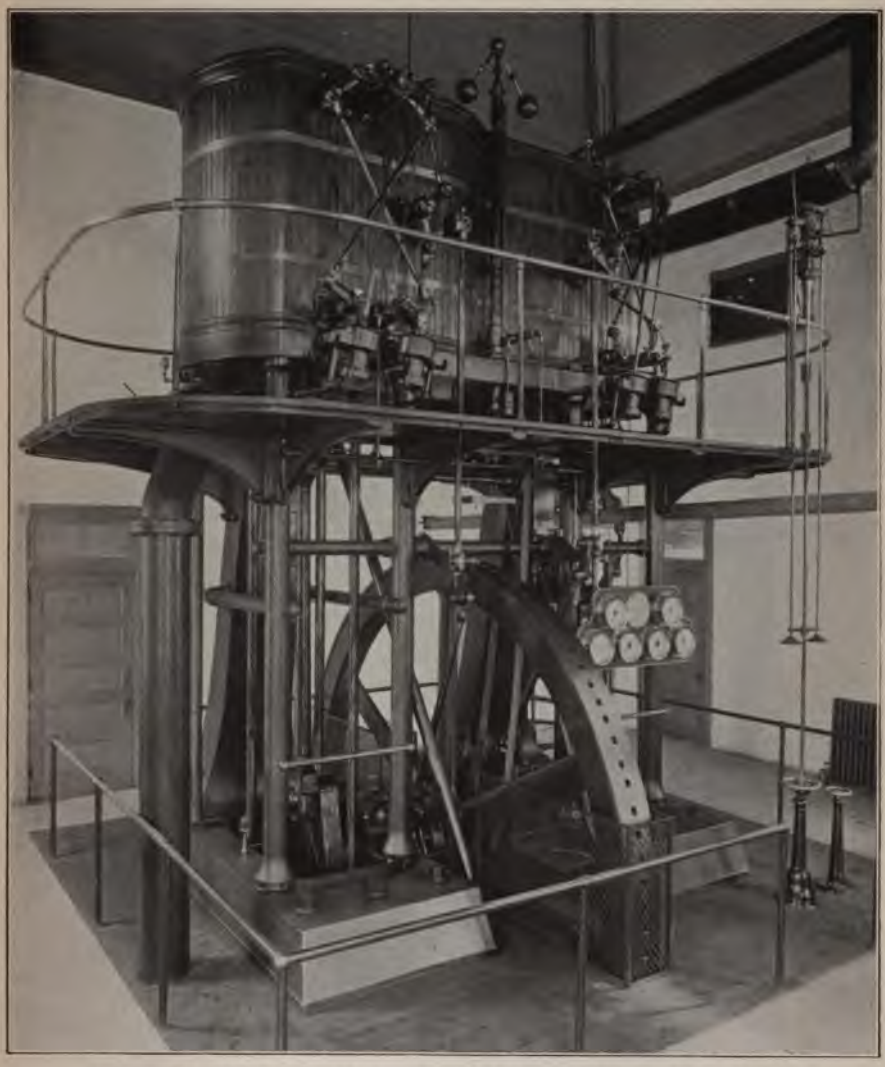
LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON HIGH SERVICE TO JAN. 1, 1905.

Street.	From Street to Street.	4-Inch.	6-Inch.	12 Inch.	16 Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Alden pl.	Pratt to Gibbs		306						
Arlington	Greenbrier to Payne	650							
Arundel	Summit to Lafond	2553							
Ashland	Western to Snelling		9508						
Aurora	Robert to Chatsworth		9819						
Arcade	Third to Rose		1070	5382					
Astoria	St. Anthony to Milwaukee		275						
Argyle	Front to Van Slyke	370	831						
Albemarle	Atwater to Maryland	1293	2568						
Arch	100 feet west of Columbia to Rice		2286						
Atlantic	Fauquier to Stillwater		1785						
Atwater	Dale to Sylvan		1261						
Agate	Cortland to Jenks		2437						
Avon	Dayton to Martin	1381	45						
Asbury	Van Buren to Blair		307						
Arkwright	Jessamine to York		655						
Beaumont	De Soto to Payne		1881						
Bedford	North to Minnehaha		1327						
Bradford	Hampton to 75 feet east of Endicott		894						
Bradley	North of Maryland		256						
Bradley	Beaumont to Minnehaha	498							
Bates	Maury to Lizzie		569	3035					
Beech	Seventh to Atlantic		4407						
Blair	Western to Fairview		6530						
Broadway	Thirteenth to Mt. Airy		407		533				
Burr	Collins to Brainerd		5183						
Burgess	Dale to Como		852						
Bayless av.	Raymond to Langford Park				2935				
Bayless pl.	Raymond to Bayless av.	902							
Burns	Mound to Griffith		2753						
Blake	Raymond to Langford P. P. E.		282		186				
Beacon	University to Shields	594							
Bourne	Keston to Eustis		388						
Buffalo	Capitol to Granite		631						
Canada	University to Valley		290						
Capitol	Mississippi to Fairview		7801						
Carroll	Rice to Cleveland		13248						
Cedar	Summit to Como		2486						
Central av.	East line of Central Park to Rice	557	1254						
Cent'l P. pl. E. and W.	Summit to Central	1209							
Charles	Rice to Vandalia		10235.3						
Capitol boul.	University to Arch		1791						
Cable	Seventh to Margaret			650					
Cook	Cypress to Rice		7626						
Conway	Earl to Hoffman		3980						
Churchill	Front to Van Slyke	1103	1263						
College	Rice to Third		1165						
Como boul.	East line of lot 4, block 5, to north line of lot 1, block 1, Warrendale		844						
Como av.	Park to Dale				512.5	6555			
Chelton	Prior to Tatum		559						
Cherry	200 feet west of Hoffman to Maria	230	565						
Case	Duchess to Terrace		345	6772					
Claghorn	Lafond to Van Buren		628						

TABLE NO. 11—Continued.

WATER MAINS ON HIGH SERVICE—Continued.

STREET.	From Street to Street.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Cypress	North to Euclid	45							
Cromwell	Manvel to Cudworth		1599						
Cudworth	Bayless to Eustis		985						
Clark	Whitall to Case		1308						
Cross	Argyle to Lexington		966						
Cambridge	Princeton to Lincoln		1060						
County rd	Scudder to Buford		1353		256				
Crocus pl	Goodrich to Fairmount	1314							
Chatsworth	Evergreen to Van Slyke		1295						
Cleveland	Lincoln to University			3411	3313				
Cortland	Capitol to Maryland		252		4640				
Cayuga	Mississippi to Cortland		1630						
Carter	West line lot 31, block 40, to County road		1936						
Collins	Lafayette to Bedford		1016						
Dale	Fairmount to Reservoir	4800		2110	5280	1453	14500	9234	1560
Dayton	Third to Cleveland	192	12078	4675					
Duchess	Wells to Case		992						
Duluth	Seventh to Omaha Ry		434						
Dayton pl	West to Maria	275							
Dawson	Arcade to Gotzian		3673						
Dooley	Keston to Cleveland		2765						
De Soto	North to Cook		4120						
Decatur	Bedford to Beaumont		710						
Earl	Thorn to Magnolia		8.5	4083	2603				
Edmund	Rice to Lexington		10471						
Eichenwald	Sixth to Seventh		532						
Euclid	Maple to Earl		2391						
Elfelt	Charles to Blair	1034							
Everett ct	Wheeler to Great Northern Ry		355						
Edgerton	Minnehaha to Orange		328	4877					
Ellis	Territorial road to Hampden		1841						
Fuller	Rice to Lexington		9202.3						
Farrington	Summit to Como		4020						
Fauquier	290 feet east of Atlantic to Greenbrier		6153						
Fifth	125 feet east of Hoffman to Hope		2208						
Floral	Summit to Oakland	518							
Fourth	Terry to 400 feet west of Maria		5342						
Front	Sylvan to Lexington		1140	10475	12	12			
Fairmount	Dale to Chatsworth		3594	518					
Fairview	Valley to 200 feet north of Mt. Airy		578						
Feronia	Fairview to Prior		1378						
Fremont	Earl to Arcade		2577						
Fairview av	Selby to Capitol			2542	1971				
Fry	Territorial rd. to Capitol	1087	6						
Frank	Margaret to Minnehaha		652						
Frances	Mendota to Cypress		1927						
Fred	Burr to Bedford	337							
Forest	Conway to Rose		3492						
Forcemain	Pumphouse to Reservoir					7886	46	70	7386
Flandrau	Harvester to Stillwater		595						
Grand	Lawton to Creton		12271						
Grove	Seventh to Pine				2618				
Grotto	Lincoln to Lafond		4594						
Goodrich	782 feet east of Dale to Oxford		5358						
Greenbrier	Arlington to Magnolia	512	332						
Gaultier	Sherburne to Geranium		4001						



FIFTEEN MILLION COMPOUND ALLIS ENGINE, CENTERVILLE STATION—ST. PAUL WATER-WORKS.

TABLE NO. 6.

SUMMARY OF WATER PIPE LAID IN THE CITY OF ST. PAUL, JANUARY 1, 1905.

System.	4 Inch.	6 Inch.	8 Inch.	12 Inch.	16 Inch.	20 Inch.	24 Inch.	30 Inch.	36 Inch.	Total Feet.	Total Miles.
High service	39,137	646,094.4	658	138,073.8	92,496.5	36,224	15,317	10,075	9,100	987,175.7	186.9651
Low service	33,707	203,611.5	8,564	52,797.0	48,429.0	8,342	8,765	16,436	18	380,669.5	72.0983
W. S. high service	326	40,133.5	.....	7,530.0	3,950.0	.....	.....	.....	.....	51,939.5	9.8369
Total	73,170	889,839.4	9,222	198,400.8	144,875.5	44,566	24,082	26,511	9,118	1,419,784.7	268.9003

	Feet.
Total 4-inch pipe	73,170.0
Total 6-inch pipe	889,839.4
Total 8-inch pipe	9,222.0
Total 12-inch pipe	198,400.8
Total 16-inch pipe	144,875.5
Total 20-inch pipe	44,566.0
Total 24-inch pipe	24,082.0
Total 30-inch pipe	26,511.0
Total 36-inch pipe	9,118.0
Grand total	1,419,784.7 feet or 268.9003 miles.

TABLE NO. 7.

HYDRANTS PLACED IN 1904.

Hydrant No.	Location.	Service.	Double or Single Steamer	Size of Hydrant Bra'ch
2456	Eaton and Water, s. w. corner	Low	Single	6-inch
877	Fillmore and Starkey, n. w. corner, changed from single to double steamer	Low	Double	6-inch
881	Fillmore and Hubert, n. w. corner, changed from single to double steamer	Low	Double	6-inch
882	Fillmore and Custer, n. w. corner, changed from single to double steamer	Low	Double	6-inch
849	Fillmore and Robert, n. w. corner, changed from single to double steamer	Low	Double	6-inch
883	Fillmore and Eaton, n. e. corner, changed from single to double steamer	Low	Double	6-inch
884	Fillmore and Eva, n. w. corner, changed from single to double steamer	Low	Double	6-inch
885	Fillmore and Robertson, n. w. corner, changed from single to double steamer	Low	Double	6-inch
805	Fillmore and State, n. w. corner, changed from single to double steamer	Low	Double	6-inch
2457	Fillmore and Robert, n. e. corner	Low	Double	6-inch
2458	Fillmore and Livingston, n. e. corner	Low	Double	6-inch
2459	Hamline and Grand, n. w. corner	High	Single	6-inch
2460	Victoria and Bayard, n. w. corner	Low	Single	6-inch
2461	Bayard, n. s., 160 feet w. of Victoria	Low	Single	6-inch
2462	Summit and Pascal, n. e. corner	High	Single	6-inch
2463	Summit and Warwick, n. e. corner	High	Single	6-inch
2464	Summit and Saratoga, n. e. corner	High	Single	6-inch
2465	Summit and Brimhall, n. e. corner	High	Single	6-inch
2466	Summit and Snelling, n. e. corner	High	Single	6-inch
2467	Ashland and Brimhall, n. w. corner	High	Single	6-inch
676	Removed to Webster and Grace, s. w. corner	Low	Single	6-inch
2468	Capitol boulevard and Winter, s. w. corner	High	Single	6-inch
2469	Capitol boulevard and Arch, s. w. corner	High	Single	6-inch
2470	Duchess and Sims, n. e. corner	High	Single	6-inch
2471	Duchess and Wells, n. e. corner	High	Single	6-inch
2472	Michigan and Duke, n. e. corner	Low	Single	6-inch
2473	Winslow and Page, n. w. corner	W. S. high.	Single	6-inch
2474	Winslow and Tyler, n. w. corner	W. S. high.	Single	6-inch
2475	Winslow and Curtice, n. w. corner	W. S. high.	Single	6-inch
2476	Winslow and Belvidere, n. w. corner	W. S. high.	Single	6-inch
2477	Oakdale and Lucy, n. w. corner	W. S. high.	Single	6-inch
2478	Oakdale and Wyoming, n. w. corner	W. S. high.	Single	6-inch
2479	Oakdale and Annapolis, n. w. corner	W. S. high.	Single	6-inch
2480	Geranium and Abell, n. e. corner	High	Single	6-inch
2481	Gaultier and Atwater, n. w. corner	High	Single	6-inch
2482	Albemarle and Hatch, n. w. corner	High	Single	6-inch
2483	Albemarle and Lawson, n. w. corner	High	Single	6-inch
2484	Albemarle and Cook, n. w. corner	High	Single	6-inch
2485	Albemarle and Oliver, n. w. corner	High	Single	6-inch
2486	Albemarle and Geranium, n. w. corner	High	Single	6-inch
2487	Albemarle and Rose, n. w. corner	High	Single	6-inch
2488	Albemarle and Maryland, s. w. corner	High	Single	6-inch
2489	Hatch and Western, n. w. corner	High	Single	6-inch
2490	Hatch and Arundel, n. w. corner	High	Single	6-inch
2491	Hatch and Mackubin, n. e. corner	High	Single	6-inch
2492	Farrington and Blair, n. w. corner	High	Single	6-inch
2493	Herschel and Shields, n. w. corner	High	Single	6-inch
2494	W. Seventh and Scheffer, s. e. corner	Low	Single	6-inch
2495	W. Seventh and Otto, s. e. corner	Low	Single	6-inch
2496	W. Seventh bet. Otto and Hathaway, s. s.	Low	Single	6-inch
2497	W. Seventh bet. Hathaway and Vista, s. s.	Low	Single	6-inch
2498	W. Seventh and Vista, s. e. corner	Low	Single	6-inch
2499	W. Seventh and Alaska, s. e. corner	Low	Single	6-inch
2500	W. Seventh and Albian, s. e. corner	Low	Single	6-inch
2501	W. Seventh and Elway, s. e. corner	Low	Single	6-inch
2502	E. Seventh, 50 feet of Bradley, n. s.	High	Double	6-inch
2503	Ashland and Dunlap, n. e. corner	High	Single	6-inch

TABLE NO. 11 —Continued.

WATER MAINS ON HIGH SERVICE—Continued.

STREET.	From Street to Street.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Magnolia	Rice to Cypress		6855						
Marion	University to Geranium		4949						
Minnehaha	Duluth to Prior		6071	8705					
McLean	Maria to Hester		1691						
Mendota	Hudson to Fauquier		655	3286					
Mt. Airy	L'Orient to Robert		2024						
Maryland	Dale to Arcade		3855	22	2640				
Mound	Hastings to 335 feet west of Earl		1298	1536					
Milwaukee	Merriam Pk. to Astoria		570						
Manvel	Robbins to Raymond		1142						
Mulberry	Third to Sixth	435							
Milford	Rice to Woodbridge		655						
Minneapolis	At Dale			18					
McMenemy	Case to Maryland			2640					
Mississippi	Great Northern Ry. to Cayuga		1136						
Manitoba	Rice to Sylvan		1139						
Macalester	Summit to Princeton		1885						
Mt. Ida	De Soto to Rivoli		535						
Milton	Victoria to Lombard		335.5						
Nelson	Summit to Western		2422						
Nina	Summit to Selby		800						
North	De Soto to Seventh		1886						
Nourse	Gordon to N. P. Ry		392						
Oakland	Ramsey to Summit		3662						
Olive	Olmsted to Pennsylvania		1057						
Oakley	Lynnhurst w. to Prior		451						
Osceola	Pleasant to Chatsworth		3709						
Otsego	Lafayette to Mt. Ida		791						
Oxford	Stinson to Front		335						
Park pl	Park drive southwest	574							
Park av	Martin to Geranium		5595.5						
Princeton	Macalester to Baldwin		1399						
Pine	Grove to Pennsylvania		1820		387				
Portland	Summit to Griggs		7928						
Pennsylvania	Rice to Pine	505	342						
Pelham	University to Wabasha		1039						
Preble	Beaumont to Minnehaha		471						
Payne	Beaumont to Cottage		7447						
Plum	Maple to Hoffman		1150						
Prior	Selby to University		804	3447					
Pascal	Minnehaha to Taylor		1743						
Pym	Bayless to Eustis			736					
Priscilla	Raymond avenue east		542						
Pratt	Raymond to Gibbs		762						
Pusey	Chelton to Hilles		1552						
Phalen	Seventh to Stillwater			1467					
Pacific	Cypress to Griffith		1860						
Pleasant	Osceola to Duke			2271					
Poplar	N. P. R. R. yard to Cortland		889						
Rice	College to Carbon		2291	2147	6967	1154			
Robert	171 feet south of University to 254 north of same		425						
Rondo	Rice to Terrace Pk. av		10061						
Ramsey	Oakland to Summit		1259						
Ross	Atlantic to Seventh		2467						
Ravoux	Rondo to Fuller	616							
River	Maria to Hoffman	359							
Ravine	Maple to 344 feet west of Maria	1423							

TABLE NO. 11 —Continued.

WATER MAINS ON HIGH SERVICE—Continued.

STREET.	From Street to Street.	4 Inch.	6 Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Raymond	University to Hendon	.....	5117	.....	1588	.....	.....	.....	.....
Robbins	Bayless to Raymond Pk.	.....	440	.....	.....	.....	.....	.....	.....
Reaney	Edgerton to English	.....	7834	.....	.....	.....	.....	.....	.....
Rose	Edgerton to Cypress	.....	3193	.....	.....	.....	.....	.....	.....
Sherburne av.	Dunlap to Jackson	400	11082	.....	.....	.....	.....	.....	.....
St. Anthony	Rice to Cleveland	.....	13893	.....	.....	.....	.....	.....	.....
St. Peter	College to University	.....	2557	.....	.....	.....	.....	.....	.....
Selby	Summit to Cleveland	.....	17398	.....	.....	.....	.....	.....	.....
Seventh	Grove to White Bear av	.....	.....	.....	15025	.....	.....	.....	.....
Sinnen	Sixth to Seventh	.....	541	.....	.....	.....	.....	.....	.....
Summit av	C. P. D. E. to Baldwin	913	5481	15420	.....	.....	.....	.....	.....
Summit pl	Nelson to Fuller	.....	2122	.....	.....	.....	.....	.....	.....
St. Albans	Pleasant to Martin	2366	300	556	.....	.....	.....	.....	.....
Sims	Edgerton to Earl	.....	4539	.....	.....	.....	.....	.....	.....
Sum'it ct. a'y	East of Lawton	.....	362	.....	.....	.....	.....	.....	.....
Short	Maria to Hoffman	.....	591	.....	.....	.....	.....	.....	.....
Snelling	Goodrich to Atlantis	.....	.....	4185.8	11195	.....	.....	.....	.....
Simpson	Blair to Hewitt	.....	1528	.....	.....	.....	.....	.....	.....
Sixth	Hoffman to Arcade	.....	2646	.....	.....	.....	.....	.....	.....
Sixth	College to Summit	.....	537	.....	.....	.....	.....	.....	.....
Sidney	Raymond to Ellis	.....	1225.5	.....	.....	.....	.....	.....	.....
Scudder	Blake to Raymond	.....	485	.....	1347	.....	.....	.....	.....
St. Clair	Victoria to Oxford	.....	.....	1935	.....	.....	.....	.....	.....
Stinson	Gaultier to Oxford	.....	1562	.....	.....	.....	.....	.....	.....
Sycamore	Rice to Cortland	.....	.....	2509	.....	.....	.....	.....	.....
Syndicate	Lincoln to Summit	.....	967	.....	.....	.....	.....	.....	.....
Stellar	Atwater to Lyton	.....	372	.....	.....	.....	.....	.....	.....
Shelton	Minnehaha to Wesley	.....	902	.....	.....	.....	.....	.....	.....
Stillwater	White Bear to Ames	.....	906	.....	.....	.....	.....	.....	.....
Summit ct	Alley to Summit	260	.....	.....	.....	.....	.....	.....	.....
Suction main	Pumphouse to Ter. Ch'r	.....	.....	.....	.....	.....	771	771	154
Sylvan	Sycamore to Acker	.....	277	.....	.....	.....	.....	.....	.....
Taylor	Aldine to Holton	.....	2898	.....	.....	.....	.....	.....	.....
Tatum	Minnehaha to Chelton	.....	541	.....	.....	.....	.....	.....	.....
Third	Cypress to Summit	367	5290.5	.....	.....	.....	.....	.....	.....
Thirteenth	Pine to Broadway	.....	.....	.....	778	.....	.....	.....	.....
Tilton	Wabasha to Rice	.....	1278	.....	.....	.....	.....	.....	.....
Thomas	Como to Chatsworth	.....	7605	.....	.....	.....	.....	.....	.....
Topping	At Como and at Dale	.....	118	.....	.....	.....	.....	.....	.....
Territorial road	Raymond to Eustis	.....	1498	.....	.....	.....	.....	.....	.....
University	Broadway to Eustis	.....	40	6769	3594	19164	.....	.....	.....
Valley	Broadway to Jackson	.....	.....	.....	1789	.....	.....	.....	.....
Viola	Jackson to Rice	.....	1653	.....	.....	.....	.....	.....	.....
Van Buren	Western to Wheeler	.....	8686	.....	.....	.....	.....	.....	.....
Victoria	St. Clair to Orchard	.....	.....	784	9518	.....	.....	.....	.....
Virginia	Summit to Como	2758	1798	.....	.....	.....	.....	.....	.....
Vandalia	University, north of Charles	.....	761.3	.....	.....	.....	.....	.....	.....
Van Slyke	Chatsworth to Lexington	.....	1438	.....	.....	.....	.....	.....	.....
Wabasha	Summit to Park	537	842	.....	.....	.....	.....	.....	.....
Western	Summit to Hatch	.....	.....	1775	6595	.....	.....	.....	.....
Williams	Olive to Mississippi	.....	857	.....	.....	.....	.....	.....	.....
Waltham	Laura to Prior	959	.....	.....	.....	.....	.....	.....	.....
Wayzata	At Albemarle	.....	90	.....	.....	.....	.....	.....	.....
Wilder	Iglehart to St. Anthony	.....	1388	.....	.....	.....	.....	.....	.....
Winter	Rice to Park	.....	570	.....	.....	.....	.....	.....	.....
Whitall	Payne to Clark	.....	2301	.....	.....	.....	.....	.....	.....
Walker	Hewitt to Great Northern Ry	807	.....	.....	.....	.....	.....	.....	.....
Wesley	Pascal to Fry	394	621	.....	.....	.....	.....	.....	.....
Workhouse	Around workhouse	.....	1043	.....	.....	.....	.....	.....	.....
Wheeler st	Bayless to Everett	.....	.....	1012	.....	.....	.....	.....	.....
Westminster	Cayuga to Case	.....	999	.....	.....	.....	.....	.....	.....

TABLE NO. 11—Continued.

WATER MAINS ON HIGH SERVICE—Continued.

Street.	From Street to Street.	4-Inch.	6-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.	36-Inch.
Wheeler av....	University to Shields....	.....	588	.....	.....	.....	.....	.....	.....
Woodbridge...	Atwater to Maryland....	.....	3869	.....	.....	.....	.....	.....	.....
Winnipeg.....	Rice to Sylvan.....	.....	1142	.....	.....	.....	.....	.....	.....
Wells, N. S....	Edgerton to Duchess....	.....	2310	.....	.....	.....	.....	.....	.....
Warren.....	Mt. Airy to Arch.....	.....	406	.....	.....	.....	.....	.....	.....
Wells, S. S....	From E. to W. end of retaining wall.....	1130	.....	.....	.....	.....	.....	.....	.....
White Bear...	Seventh to Ames.....	.....	.....	1992	.....	.....	.....	.....	.....
Wycliff.....	Bradford to Hampden..	.....	700	.....	.....	.....	.....	.....	.....
York.....	Forest to Cortland.....	.....	5782	.....	.....	.....	.....	.....	.....

	Feet.
Total 4-inch pipe.....	39,137
Total 6-inch pipe.....	646,094.4
Total 8-inch pipe (Hamp-den)	658
Total 12-inch pipe.....	138,073.8
Total 16-inch pipe.....	92,496.5
Total 20-inch pipe.....	36,224
Total 24-inch pipe.....	15,317
Total 30-inch pipe.....	10,075
Total 36-inch pipe.....	9,100
Total	987,175.7 feet, or 186.9651 miles.

TABLE NO. 12.

LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON LOW SERVICE TO JAN. 1, 1905.

Street.	From Street to Street.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.
Ann.....	Von Minden to Yankee..	.....	286	.....	.....	.....	.....	.....	.....
Alabama.....	Crossing State.....	.....	55	.....	.....	.....	.....	.....	.....
Armstrong....	Drake to Chatsworth....	.....	3865	.....	.....	.....	.....	.....	.....
Arbor.....	James to Grace.....	.....	1645	.....	.....	.....	.....	.....	.....
Audubon.....	Seventh to Drake.....	.....	745	.....	.....	.....	.....	.....	.....
Ada.....	Robie to Congress.....	334	332.5	.....	.....	.....	.....	.....	.....
Anita.....	Concord 25 feet east.....	25	.....	.....	.....	.....	.....	.....	.....
Banfil.....	Smith to Duke.....	2302	667	.....	.....	.....	.....	.....	.....
Bay.....	Stewart to Randolph....	.....	1944	.....	.....	.....	.....	.....	.....
Becker pl.....	Lafayette to De Soto....	.....	481	.....	.....	.....	.....	.....	.....
Belvidere.....	Andrew to Concord.....	.....	1647	.....	.....	.....	.....	.....	.....
Bradley.....	100 feet south of Grove to North.....	.....	1503	.....	.....	.....	.....	.....	.....
Bellows.....	Winifred 25 feet north..	.....	25	.....	.....	.....	.....	.....	.....
*Broadway....	Mississippi river to University avenue.....	498	1735	.....	.....	1938	.....	1741	.....
Bruno.....	East of Lafayette.....	.....	47	.....	.....	.....	.....	.....	.....
Bancroft.....	Concord to Congress.....	.....	935	.....	.....	.....	.....	.....	.....
Bayard.....	Victoria to Milton.....	.....	180	.....	.....	.....	.....	.....	.....
Bidwell.....	Isabel to Congress.....	.....	302	.....	.....	.....	.....	.....	.....
Brunson.....	Partridge to North.....	.....	788	.....	.....	.....	.....	.....	.....
Canada.....	Ninth to University.....	.....	2055	.....	.....	.....	.....	.....	.....
Cedar.....	Summit to Second.....	.....	289	176	2573	.....	614	.....	.....
Chestnut.....	Seventh to Washington.	.....	1235	.....	.....	.....	.....	.....	.....
Colborne.....	Jefferson to Superior....	.....	1763	.....	.....	.....	.....	.....	.....
College.....	Cedar to Smith.....	.....	1670	.....	.....	.....	.....	.....	.....
Cross Miss. river.....	Broadway to State.....	.....	.....	.....	.....	1089	.....	.....	.....
Canton.....	Logan to Otto.....	.....	1068	.....	.....	.....	.....	.....	.....

*Includes portion of Mississippi street south of Grove street.

CENTERVILLE LAKE, ACREAGE 425 ACRES—ST. PAUL WATER-WORKS.

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ASTOR, LENOX AND
TILDEN FOUNDATIONS

TABLE NO. 12.—Continued.

WATER MAINS ON LOW SERVICE—Continued.

STREET.	From Street to Street.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.
Concord	Isabel to Belvidere				6860				
Congress	350 feet east of Bancroft to Charlton	392	6425						
Chicago	Wabasha to S. Robert		741						
Colorado	R. R. to Stryker		1624						
Clinton	Congress to Winifred		403						
Columbia	Glencoe to Pennsylvania		745						
Cliff	Goodhue to Smith		250.5						
Clifton	James to Palace		517						
De Soto	Hopkins to Becker place		180		1540				
Douglas	Seventh to Ramsey		1144						
Duke	Cascade to St. Clair		1893						
Dousman	Von Minden to Goodhue		576						
Delos	Greenwood to Bellows		3282						
Daly	James to Jefferson		1050						
Dearborn	Robert to Gorman		705						
Eagle	Spring to Seventh		1449						
Eighth	Wabasha—110 ft. east of Neill	1425		3321					
Eleventh	Cedar to Jackson		1238						
Elm	Exchange to C., M. & St. P. R. R.	406							
Exchange	Wabasha to Wilkin	3962	323						
Eaton	Indiana to Water		358			100			
Erie	St. Clair to Cascade		1807						
Emma	Western to Short Line	373							
Fairfield	State to Belle		5319						
Fauquier	Payne to De Soto				1982				
Fifth	Third to Kittson	1458	3120		2938				
Fort	Seventh to Tenth						1616		
Fourth	Exchange to 762 feet east of Kittson		4865		2679				
Fourteenth	Broadway to Robert		1368						
Franklin	Elm to Ninth	3308							
Fillmore	Hyde to State		1047			2803			
Forbes	Wilkin to Douglas		1274						
Fulton	James to Palace		470						
Garfield	Ramsey to Goodrich		1002						
Goodhue	Cliff to Duke		2817						
Goodrich	Milwaukee Short Line to Pleasant		1331		2328				
Grace	Seventh to Colborne		72						
Grove	Monroe to Jackson	133	1310				1544		
Glencoe	Mississippi to Columbia		592						
George	State to Stryker				2625				
Goff	Wabasha to Robie		402						
Greenwood	Winifred to Delos	310	305						
Harrison av	Douglas to Goodrich		2381						
Hopkins	De Soto to Bradley		700						
Hall	George to Prospect ter.		2080						
Indiana	State to Ethel				2462	2242			
Isabel	State to Charlton				5055				
Jackson	Levee to University	40	1223		3179		108		
Jefferson	Erie to Arbor		63		1171				
James	Webster to Victoria		2405						
John	Third to Williams	889	2449						
Juno	View to Chatsworth		2130						
Kittson	Fourth to Seventh		846						
Kittson's ad	Alley, block 4				222				
Kentucky	Crossing State		55						
Lafayette	Grove to De Soto				150	1915			
Lee	Seventh to Drake		1445						
Leech	Goodrich to Ramsey		1146						

TABLE NO. 12.—Continued.

WATER MAINS ON LOW SERVICE—Continued.

STREET.	From Street to Street.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.
Levee	Olive to Jackson	340	614						
L'Orient	Thirteenth to Minnehaha		2209						
Livingston	Delos to Water		824						
Lisbon	Douglas to Pleasant		973						
Logan	Bay to Seventh		942						
Louisa	Robert to Gorman		701						
Locust						627	288		
McBoal	Wilkin to Douglas		1301						
Magnolia	Crossing Mississippi		18						
Market	Third to Fourth	250							
Minnesota	Third to Twelfth	1484	1428						
Mississippi	Grove to Overton		5165					8013	
Monroe pl	Grove to Woodward	300							
Mt. Airy	Mississippi to L'Orient		330						
Michigan	W. Seventh to Duke		1302						
Mayall Alley	Seventh to Ninth	410							
Midway	Oakdale to Brown		1847						
Nash	Pine to L'Orient		698						
Neill	Seventh to Eighth	325							
Ninth	Neill to Smith	975	5187						
Norris	Canada to Temperance	761							
Nugent	St. Clair to C., M. & St. P. Short Line		513						
Olive	Sixth to Olmsted	236	1248						
Olmsted	John to Pine		651						
Oneida	Grace to 36 feet south of Seventh		634						
Ontario	Washington to Spring	112							
Oakdale	State to Midway		326			350			
Overton av	Mississippi to terminal chamber								*8423
Page	Concord to Andrew		1030.5						
Palace	Clifton to Milton		840						
Partridge	Bradley to De Soto	472							
Pine	Seventh to Olmsted	977	1263		132				
Plato	West of South Robert		18						
Pleasant	Sixth to Goodrich		4884						
Prince	John to Broadway		825						
Pennsylvania	Mississippi to a point 300 feet west of Columbia		961						
Prescott	Oakdale to Woodbury		1365						
Ramsey	Seventh to Pleasant		1352						
Randolph	Webster to Milton		777.5		2818				
Richmond	Grace and Goodrich		568						
Robert	Elizabeth to Central		8881						
Rosabel	Union Depot Grounds to Seventh		1598						
Robie	Winslow to Andrew		2726						
St. Clair	Cliff to Colborne		985		361				
St. Peter	Third to College		2866						
Seventh	Duluth R. R. to Elway	350	1000		470	20662	1508		
Second	East of Robert		18						
Sherman	Bluff to Pleasant		1937						
Sixth	Kittson to Pleasant	64	2044	5067					
Sibley	Levee to Norris	1626	1462						
Smith	College to Cliff		3764						
Somerset	John to Pine		669						
Spruce	Sibley to Pine	442	241						
State	Mississippi river to W. Side pumphouse					7704			
Superior	Western to Duke		1282.5						

*Also 18 feet 36-inch, Overton avenue, Mississippi to terminal chamber.

TABLE NO. 12.—Continued.

WATER MAINS ON LOW SERVICE—Continued.

Street.	From Street to Street.	4-Inch.	6-Inch.	8-Inch.	12-Inch.	16-Inch.	20-Inch.	24-Inch.	30-Inch.
Summit	Robert to Cedar		859						
Sturgis	Douglas to Garfield		660						
Stryker	George to Prospect ter.		2106						
Stewart	Tuscarora to Otto		1736.5						
Temperance	Eighth to Thirteenth	1569							
Tenth	Grove to College	441	1531		2289	139	1390		
Third	Pleasant to west end of Third street bridge		847		6648				
Thirteenth	Pine to Jackson		2075						
Thompson	Ramsey to Pleasant		545						
Twelfth	Jackson to Cedar						1274		
Toronto	Seventh to Jefferson		799						
Tennessee	Crossing State		51						
Tuscarora	Stewart to Chatsworth		3285						
Van Slyke court	Broadway to Olive	557							
Von Minden	Dousman to Western		897						
View	Seventh to Palace		2081						
Victoria	Seventh to Juliet				1343				
Wacouta	Union Depot ground to Spruce	783	118		1736				
Walnut	100 feet south of I. P. to Pleasant	2420							
Water	Across Wabasha		59						
Warsaw	Audubon to Jefferson		1613						
Washington	Chestnut to Seventh	1047			1236				
Waverly pl.	Lafayette to John		411						
Webster	Grace to Randolph		984						
Western	Milwaukee Ry. to Pleasant		2550						
Westminster	Waverly pl. to N. P. Ry		1022						
Willius	Fifth to Seventh	550							
Wilkin	Short Line Ry. to Pleasant		1209						
Winifred	Charlton to Andrew		6097						
Whitney & Smith's ad.	Alley, block 15		355.5						
Woodward	Bradley to John	683							
Wabasha	Goff to Summit		6074			2553			
Watson	View to Chatsworth		2133						
Winslow	George to Prospect ter.		1055						
Yankee	Seventh to Dousman	678							
Main old line	Fauquier to Lake Phalen					6000		7024	

	Feet.
Total 4-inch pipe	33,707
Total 6-inch pipe	203,611.5
Total 8-inch pipe	8,564
Total 12-inch pipe	52,797
Total 16-inch pipe	48,429
Total 20-inch pipe	8,342
Total 24-inch pipe	8,765
Total 30-inch pipe	16,436
Total 36-inch pipe	18
Total	380,669.5 feet, or 72.0983 miles.

There are 16,177 feet of tunnels for mains and 900 feet of tunnels for fire hydrants in the sand-rock district. Size of same, 6 feet in height and 3.5 in width, tapering towards top to 1.5 feet.

There are also 12 ventilating and riser shafts, and 49 hydrant shafts 7 feet in diameter at bottom and tapering towards top to about 2 feet. They are bricked from top of solid rock to a height of about 10 feet.

TABLE NO. 13.

LOCATION, SIZE AND NUMBER OF FEET OF WATER MAINS LAID ON HIGH SERVICE, WEST SIDE, TO JAN. 1, 1905.

STREET.	From Street to Street.	4 Inch.	6 Inch.	12 Inch.	16 Inch.
Annapolis	At Manomin			100	
Alice	Ohio to the Park		141		
Baker	Bidwell to Delaware			3850	
Belvidere	South Robert to Oakdale		873		
Bidwell	Robie to 100 feet south of Sidney		854	346	362
Bunker	Oakdale to Brown		1808		
Cherokee av	Annapolis to N. L. of Smith av		4349		
Force main	From Annapolis to Tank			100	
Curtice	Oakdale to 250 feet E. of Woodbury		1437		
Delaware	Baker to Annapolis		2552.5		
Dearborn	Goff to Bidwell		1449		
George	Stryker to Smith av		3581		
Goff	Elizabeth to Morton		576		
Hall av	Morton to Louisa		894		
King	Ohio to Orleans		587		
Manomin	Baker to Annapolis			2540	
Morton	Robert to Bidwell				2672
Mt. Hope	Bunker to Page	326			
Oakdale av	Midway to Annapolis		2609		
Orleans	Cherokee to Page		2517		
Ohio	Winona to Cherokee		3900		
Ottawa	Sidney to Annapolis		1417		
Page	Robert to Harvard		1344		170
Robert	Belvidere to Morton			594	606
Robie	Bidwell to Orleans		1109		
State	Page to Pump House				140
Sidney	Ottawa to Cherokee		346		
Smith av	Cherokee to Annapolis		4002		
Stryker av	Wyoming to George		2634		
Winslow	Robie to Belvidere		1154		

	Feet.
Total 4-inch pipe	326
Total 6-inch pipe	40,133.5
Total 12-inch pipe	7,530
Total 16-inch pipe	3,950
Total	51,939.5 feet, or 9.8369 miles.

PELTIER LAKE, ACREAGE 310 ACRES—ST. PAUL WATER-WORKS.

TABLE NO. 14.

INVENTORY OF STOCK JAN. 1, 1905.

PIPES AND SPECIALS.

60 feet 36-inch cast iron pipe.
15 feet 30-inch cast iron pipe.
224 feet 24-inch cast iron pipe.
13 feet 20-inch cast iron pipe.
340 feet 16-inch cast iron pipe.
1,324 feet 12-inch cast iron pipe.
56 feet 10-inch cast iron pipe.
206 feet 8-inch cast iron pipe.
668 feet 6-inch cast iron pipe.
357 feet 4-inch cast iron pipe.
75 feet 8-inch wrought iron pipe.
38 feet 4-inch wrought iron pipe.
14 feet 2½-inch galvanized iron pipe.
100 feet 3½-inch galvanized iron pipe.
22 feet 3-inch (old) galvanized iron pipe.
234 feet 2-inch galvanized iron pipe.
38 feet 1¼-inch galvanized iron pipe.
19 cast iron 4-inch plugs.
62 cast iron 6-inch plugs.
1 cast iron 8-inch plug.
16 cast iron 12-inch plugs.
5 cast iron 16-inch plugs.
5 cast iron 20-inch plugs.
4 cast iron 24-inch plugs.
1 cast iron 30-inch plug.
2 cast iron 36-inch plugs.
1 8x4-inch reducer.
1 8x6-inch reducer.
4 12x6-inch reducers.
1 16x12-inch reducer.
1 24x16-inch reducer.
7 3-inch gates.
9 4-inch gates, single faced, old.
11 4-inch gates.
7 6-inch gates.
1 8-inch gate.
3 12-inch gates.
1 20-inch gate.
2 6x6-inch sleeves and gates, Smith patent.
1 6x6-inch sleeve and gate, with flange.
2 6x2-inch sleeves and gates, Smith patent.
6 6x4-inch sleeves and gates, Smith patent.
1 6x3-inch sleeve and gate, Smith patent.
3 8x6-inch sleeves and gates. Smith patent.
1 8x4-inch sleeve and gate, Smith patent.
3 12x6-inch sleeves and gates, Smith patent.
2 12x4-inch sleeves and gates, Smith patent.
2 16x6-inch sleeves and gates, Smith patent.
2 16x4-inch sleeves and gates Smith patent.
8 4-inch open sleeves.
10 4-inch solid sleeves.
10 6-inch solid sleeves.
4 6-inch open sleeves.
4 8-inch solid sleeves.
4 8-inch open sleeves.
2 12-inch solid sleeves.
4 12-inch open sleeves.
1 16-inch solid sleeve.
3 16-inch open sleeves.
3 20-inch solid sleeves.
1 20-inch open sleeve.
1 24-inch open sleeve.
1 30-inch open sleeve.
3 36-inch solid sleeves.
18 4x4-inch 3-ways.
8 6x4-inch 3-ways.
3 6x3-inch 3-ways.
5 6x6-inch 3-ways.
1 8x6x6-inch 3-ways.
1 8x4-inch 3-ways.
1 12x12-inch 3-ways.
4 12x6-inch 3-ways.
1 12x4-inch 3-ways.
1 16x4-inch 3-ways.
2 16x6-inch 3-ways.
1 20x6-inch 3-ways.
1 24x24x16-inch 3-ways
1 24x12-inch 3-ways.
1 24x4-inch 3-ways.
15 4x4-inch 4-ways.
18 6x4-inch 4-ways.
6 6x6-inch 4-ways.
2 8x6-inch 4-ways.
3 12x6-inch 4-ways.
4 12x4-inch 4-ways.
1 12x12-inch 4-ways.
1 16x12-inch 4-ways.
1 24x12-inch 4-ways.
1 24x6-inch 4-ways.
1 24x4-inch 4-ways.
1 12x12x12-inch Y branch.
1 20x20x20-inch Y branch.
2 24x20x20-inch Y branches
1 36x36x24-inch Y branch.
4 4-inch ⅛-bends.
2 4-inch ¼-bends.
5 6-inch ⅛-bends.
4 6-inch ¼-bends.
2 8-inch ⅛-bends.
2 8-inch ¼-bends.
2 16-inch ⅛-bends.
1 20-inch ⅛-bend.
1 20-inch ¼-bend.
3 24-inch 1-16-bends.
1 30-inch 1-16-bends.
17 16x24-inch gate boxes, complete.
5 12-inch gate boxes, complete.
8 6-inch gate boxes, complete.
4 4-inch gate boxes, complete.
13 gate box top pieces, extra.
12 middle stems for gate box, extra.
130 gate box covers, extra.
1 24-inch spindle R. D. W. gate.
5 16-inch spindle R. D. W. gates.
2 20-inch spindle R. D. W. gates.
1 12-inch spindle Ludlow gate.
4 6-inch spindle Ludlow gates.
8 4-inch spindle Ludlow gates.
1 16-inch spindle Galvin gate.
2 6-inch spindle B. M. gates.
6 4-inch spindle B. M. gates.
1 manhole frame and cover.
4 D. S. fire hydrants, complete.
3 S. S. fire hydrants, complete.

TABLE NO. 14—Continued.

6 D. S. casings, extra.
3 S. S. casings, extra.
2 D. S. hydrants, without casings.
1 S. S. hydrant, without casings.
1 base for D. S. tunnel hydrant.
1 base for D. S. hydrant.
7 6-inch bases for S. S. hydrants.
5 4-inch bases for S. S. hydrants.
5 rods for D. S. hydrants.
27 rods for S. S. hydrants.
3 tops for D. S. hydrants.
11 tops for S. S. hydrants.
9 Globe valves for D. S. hydrants.
19 Globe valves for S. S. hydrants.
7 Ring valves for D. S. hydrants.
17 Ring valves for S. S. hydrants.
8 large caps for hydrants.
15 small caps for hydrants.
3 hydrant cap reducers for 2½-inch hose.
14 hydrant cap reducers from ¾-inch to 1-inch.
9 stuffing boxes for D. S. hydrants.
6 stuffing boxes for S. S. hydrants.
2 brass valve seats for D. S. hydrants.
7 brass valve seats for S. S. hydrants.
4 large hydrant nozzles.
6 small hydrant nozzles.
31 brass top nuts for hydrants.
9 brass nuts for hydrant stuffing boxes.
12 ring valve nuts for hydrants.
15 Globe valve nuts for hydrants.
35 rubber seat washers for D. S. hydrants.
56 rubber seat washers for S. S. hydrants.
14 revolving nuts for hydrants.
1 set of Sample's standards for hydrants.
19 sprinkling crane attachments.
20 2-inch stop and waste valves.
24 1½-inch stop and waste valves.
1 sprinkling stand pipe casing.
3 basins for sprinkling stand pipe casings.

SERVICE CONNECTION.

153 Morgan stop boxes, complete.
4,344 pounds ⅝-inch extra strong lead pipe.
1,641 pounds ¾-inch extra strong lead pipe.
1,309 pounds 1-inch extra strong lead pipe.
916 pounds 1¼-inch extra strong lead pipe.
1,280 pounds 1½-inch extra strong lead pipe.
1,216 pounds 2-inch extra strong lead pipe.
5 1-inch stop and waste cocks for iron pipe.
23 1-inch stop and waste cocks for lead pipe.
3,757 pounds pig lead.
17 ¾-inch stop and waste cocks for lead pipe.
38 ⅝-inch stop and waste cocks for lead pipe.
5 2-inch Corporation cocks.
4 1½-inch Corporation cocks.
19 1¼-inch Corporation cocks.
33 1-inch Corporation cocks.
34 ¾-inch Corporation cocks.
27 ⅝-inch Corporation cocks.
10 ½-inch Corporation cocks.
93 soldering nipples, ¾ to 2 inches.
23 unions from ½ to 2 inches.
280 brass bolts for stop box covers.

REPORT OF CHIEF ENGINEER.

ST. PAUL, MINN., Jan. 1, 1905.

To the Board of Water Commissioners,

GENTLEMEN: I herewith submit the twentieth annual report of the five pumping stations. Engines and boilers at all stations are in good working order and have required but the ordinary repairs and packing. The following tabulated record shows the operation of the pumping station.

McCARRON LAKE STATION.

Total gallons pumped	1,744,561,100
Daily average gallons pumped	4,779,619
Total pounds of coal used	2,725,674
Daily average pounds of coal used	7,463
Daily increase since 1903 (gallons)	410,079

WEST SIDE STATION.

Total gallons pumped	22,848,624
Daily average gallons pumped	62,598
Total pounds of coal used	164,200
Daily average pounds of coal used	717
Total gallons gasoline oil used	1,664
Daily average gallons gasoline oil used	9.33
Daily decrease since 1903 (gallons)	3,320

VADNAIS LAKE STATION.

Total gallons pumped	266,306,632
Daily average gallons pumped	3,804,419
Total pounds of coal used	180,700
Daily average pounds of coal used	2,608

Centerville Lake and Baldwin Lake stations have not been in operation during the year 1904.

TOTAL NUMBER OF GALLONS OF VENTURI METER AT McCARRON LAKE STATION FOR LOW SERVICE FROM VADNAIS LAKE.

Months 1904	Total Number of Gallons	Daily Average Gallons
January	137,729,240	4,442,891
February	145,897,620	5,030,607
March	154,755,070	4,992,009
April	136,165,920	4,358,864
May	144,710,495	4,668,080
June	137,310,360	4,577,012
July	145,448,600	4,691,890
August	149,697,240	4,825,717
September	137,033,600	4,567,786
October	138,424,028	4,464,028
November	129,231,960	4,307,732
December	135,547,520	4,372,500
Total	1,689,535,322	4,628,863

Daily average, 4,628,863 gallons

Daily increase since 1903, 396,284 gallons.

ST. PAUL WATER WORKS PUMPING STATION, McCARRON'S LAKE.

ENGINEER'S REPORT FOR THE YEAR ENDING DEC. 31, 1904.

Months, 1904.	Number of Hours Pumped.			Number of Gallons Pumped.			Total Gallons Pumped.	Daily Average Gallons Pumped.	Total Pounds of Coal Used.	Daily Ave'ge Lbs. of Coal Used.
	Engine No. 1.	Engine No. 2.	Engine No. 3.	Eng. No. 1.	Eng. No. 2.	Eng. No. 3.				
January	.....	.....	742	.....	.....	127,513,100	127,513,100	4,113,325	245,050	7,904
February	.....	.....	694½	.....	.....	145,044,900	145,044,900	5,001,548	264,866	9,133
March	.....	.....	735	.....	.....	156,341,900	156,341,900	5,043,287	250,091	8,099
April	.....	.....	701	.....	.....	137,966,400	137,966,400	4,598,880	210,145	7,004
May	8	.....	726	.....	2,882,000	152,724,000	155,606,000	5,019,548	249,243	8,040
June	27½	46½	626	7,072,000	7,912,400	134,477,200	149,461,600	4,982,053	225,386	7,512
July	.....	.....	729	.....	.....	156,885,300	156,885,300	5,060,816	220,840	7,158
August	.....	.....	723	.....	.....	158,401,100	158,401,100	5,109,712	221,425	7,142
September	.....	.....	713	.....	.....	143,157,300	143,157,300	4,771,910	196,979	6,566
October	73½	125	502	10,886,800	39,719,200	97,626,100	148,232,100	4,781,680	216,270	6,976
November	.....	.....	711	.....	.....	136,393,400	136,393,400	4,546,446	206,964	6,832
December	.....	.....	740	.....	.....	129,558,000	129,558,000	4,179,280	217,921	7,030
Total	109	171½	8,342½	17,958,800	50,513,600	1,676,088,768	1,744,561,100	4,779,619	2,725,184	7,463

Total gallons pumped	1,744,561,100
Daily average gallons pumped	4,779,619
Total pounds of coal used	2,725,184
Daily average pounds of coal used	7,463
Daily increase since 1903	410,079

Note.—Coal for heating building, changing boilers and electric light plant included in above statement.

ST. PAUL WATER WORKS PUMPING STATION, WEST ST. PAUL.

ENGINEER'S REPORT FOR THE YEAR ENDING DEC. 31, 1904.

Months, 1904.	Number of Hours Pumped.		Number of Gallons Pumped.		Total Gallons Pumped.	Daily Average Gallons Pumped.	Total Pounds of Coal Used.	Daily Average Pounds of Coal Used.	Total Gallons Gasoline Oil Used.	Daily Average Gallons Gasoline Oil Used.
	Engine No. 1.	Engine No. 2.	Engine No. 1.	Engine No. 2.						
January	.....	196	.....	1,555,768	1,555,768	50,186	3,800	122	304.00	9.8
February	.....	214	.....	1,698,732	1,698,732	58,577	3,300	114	327.00	11.29
March	.....	248.40	.....	1,973,916	1,973,916	63,474	2,700	87	364.50	8.76
April	25.50	171	430,380	1,357,398	1,787,778	59,592	5,200	173	263.00	6.56
May	26.50	127.30	1,054,620	1,012,095	2,066,715	66,668	10,850	350	203.50	.....
June	56.15	.....	2,095,560	.....	2,095,560	69,852	27,250	908	.....	.....
July	55.15	.....	2,111,220	.....	2,111,220	68,103	22,600	729	.....	.....
August	63.15	.....	2,450,880	.....	2,450,880	79,060	23,500	758	.....	.....
September	52.25	.....	2,021,580	.....	2,021,580	67,386	20,500	683	.....	.....
October	53.50	.....	2,044,620	.....	2,044,620	65,955	20,000	645	.....	.....
November	44.25	.....	1,613,880	.....	1,613,880	53,796	17,500	583	.....	.....
December	10	130.50	389,340	.....	1,427,895	46,061	7,000	226	202.50	9.20
Total	386.05	1,088	14,212,080	8,636,464	22,848,624	62,598	164,200	717	1,664.50	9.33

Total gallons pumped	22,848,624
Daily average gallons pumped	62,598
Total pounds of coal used	164,200
Daily average pounds of coal used	717
Total gallons gasoline oil used	1,664
Daily average gallons gasoline oil used	9.33
Daily decrease since 1903 (gallons)	3,320

ST. PAUL WATER WORKS PUMPING STATION, VADNAIS LAKE.

ENGINEER'S REPORT FOR THE YEAR ENDING DEC. 31, 1904.

MONTHS, 1904.	Number of Hours Pumped.	Total Number of Gallons Pumped.	Daily Average Gallons Pumped.	Total Pounds of Coal Used.	Daily Average Pounds of Coal Used.
July	654	109,956,000	3,546,968	75,500	2,435
August	641	113,752,848	3,669,446	75,600	2,700
September	245	42,597,784	4,196,845	29,600	2,691
Total	1,540	266,306,632	3,804,419	180,700	2,608

Total gallons pumped	266,306,632
Daily average gallons pumped	3,804,419
Total pounds of coal used	180,700
Daily average pounds of coal used	2,608

Respectfully submitted,

MARTIN FEIST,
Chief Engineer.

INVENTORY OF STOCK AND TOOLS AT McCARRON PUMPING STATION.

1 Vise.
1 Set of screw dies and tap from ¼ inch to 1 inch.
1 Set of screw dies and tap from 1-16 inch to ¼ inch.
1 Set pipe dies and tap from ¼ inch to ¾ inch.
1 Set pipe dies and tap from 1 inch to 2 inches.
2 Pipe cutters.
1 Pair of 2-inch pipe tongs.
1 24-inch pipe wrench.
1 12-inch pipe wrench.
1 22-inch Coe's wrench.
1 14-inch Coe's wrench.
1 8-inch Coe's wrench.
1 6-inch Coe's wrench.
1 Portable blacksmith's forge.
6 Blacksmith's tongs.
1 Anvil.
1 Sledge hammer.
2 Hand hammers.
1 Soft hammer.
6 Files.
2 Saws.
1 Saw set.
1 Axe.
1 Hatchet.
1 ½-ton chain block.
1 3-ton chain block.
1 Set of steel wrenches for Nos. 1, 2 and 3 pumps.
1 24-inch square.
1 Lead pot.
5 Chairs.
4 Ladders.
1 Good cupboard.
1 Work bench.
4 Cuspidors.
1 Ratchet and 12 drills.
1 Ratchet brace and bit.
3 Jackscrews.
1 Draw knife.
3 Planers.
3 Paint brushes.
6 Chisels.
1 Edson recording gauge.
1 Thompson steam engine indicator.
50 Feet of 1¼-inch rubber hose.
50 Feet of ¾-inch rubber hose.
3 Oil tanks.
1 50-foot tape measure.
3 ½-gallon oil cans.
2 3-quart oil cans.
3 Hand oilers.
1 12-inch level.
1 Lawn mower.
1 Steel coal wheelbarrow.
2 Coal scoops.
1 Coal hammer.
1 Fairbanks 6-ton scale.
1 Fairbanks 1,000-pound scale.
1 Grindstone.
3 Large tubular lanterns.
3 Small lanterns.
1 Sickle.
1 Rake.
2 Scythes.
1 Clock.
1 Writing desk.
4 Shovels.
1 Water pail.
2 Drinking cups.
1 Regrinding machine for ¼-inch to 2-inch valves.
1 Stove and pipe at terminal chamber.
1 Ice water tank.
2 Gate wrenches.
3 Steel brooms.
4 Brooms.
1 Tackle and 75-foot rope.
1 Pair rubber boots.
8 Pounds piston rod packing.
5 Pounds hemp packing.
3 Pounds Jenkin's packing.
3 Pounds Dixon graphite.
12 ¾x14-inch water glasses.
19 Gallons cylinder oil.
25 Gallons engine oil.
125 Pounds waste.
25 Gallons kerosene oil.
8 Pounds polishing paste.
1 Gasoline oil plumber furnace.
1 Concord buggy.
1 Cutter.
1 Robe.
1 Harness.
1 Lot of old piece steam pipes and fittings.
1 Lot of old windows and doors.
66 Tons Youghiogheny coal.
1 Cord maple wood.

BALDWIN LAKE PUMPING STATION. TEN MILLION LOW LIFT
DEANE PUMPING ENGINE—ST. PAUL WATER-WORKS.

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REPORT OF
COMMISSIONER OF PUBLIC WORKS.
FOR 1904.

ST. PAUL, MINN., Dec. 31, 1904.

Board of Water Commissioners,

GENTLEMEN: I submit herewith my annual report of the work done by the engineering department for the water board, during the year 1904, together with some recommendations for future work. The year 1904 has been a very favorable one as regards water supply. The total rainfall of the year was 34.11 inches, or a little more than 26 per cent above the normal. We have consequently had an abundance of water for the city's use from the Vadnais Lake system, without drawing at all from the Rice Lake system, a very unusual circumstance, as at times of normal rainfall about 2,100,000,000 gallons of water are usually drawn from this source of supply. The total amount of water consumed during the year was 3,510,974,000, showing a total increase of 293,410,561, or a daily increase of about 800,000 gallons, over the previous year. These figures indicate a very considerable increase in domestic use, as, on account of the abundant rainfall, very much less water was used for street and lawn sprinkling than in former years.

The work of the engineering department during the year has been principally making surveys around Vadnais lake and establishing the property corners for condemnation purposes, and in laying out new lines of road to better protect the shores of the lake. Quite a considerable amount of work has also been done in making explorations and surveys of the country north of Peltier lake, to determine the extent and character of the drainage area and also to secure accurate information in regard to the damages claimed by property owners on account of the dam constructed at the outlet of Peltier lake for storage purposes, the unusual rainfall of the last two years giving rise to claims for overflow of meadow lands, the responsibility for which the property owners would throw upon the construction of said dam. I have already made a report in regard to this matter and am now preparing maps from which the actual conditions can be ascertained.

VADNAIS LAKE SYSTEM.

The only additional contract work of the water board which has been under the charge of the engineering department during the year has been the sinking of a 10-inch well at Vandais lake, which was done in accordance with the recommendations of last year's report. The contract price for this well was $3.45 per foot to the top of the rock and $2.40 per foot from the top of the rock to the bottom of the well. The total cost of the well, connected, was $2,111.50. The total depth of the well was 659 feet, of which 212 feet were cased with wrought iron pipe, the balance being in rock. The following is a record of the material encountered:

20 feet clay, sand and water.
210 feet sand.
67 feet limestone shell.
27 feet hard sandstone.
27 feet hard limestone.
83 feet fine white sand rock.
186 feet very fine white sand rock.
39 feet very coarse white sand rock.

659 feet, total depth.

The best water-bearing strata was struck at a depth of 620 feet. It is estimated from our tests that about 400,000 gallons can be obtained from this well. The result has been quite satisfactory. The available amount of water has been increased to 4,400,000, or very nearly the full capacity of the five million gallon pump. I would also say in this connection that on this account the efficiency of the pump is increased about seven per cent over the results of the previous year.

In my previous reports I have spoken of the necessity of increasing our storage supply, and have outlined, in a general way, plans for such work, but until funds can be made available other than the receipts for the use of water, nothing can be done in this direction.

I would call your attention to a few recommendations which seem to be required for the operation and maintenance of that portion of the water works outside the city limits.

Fencing right of way about Vadnais lake, estimated cost.....	$1,000
Changing highway on north side of lake, estimated cost.....	1,500
Extending conduit between Pleasant and Sucker lakes from its present terminus to the White Bear road, estimated cost....	8,000
Reconstruction of the flume line between Pleasant lake and the end of conduit at Wilkinson lake, estimated cost.....	3,000
Renewal of Otter lake gate chamber with permanent construction, estimated cost	2,500

Repairs on the wooden pipe conduit from Centerville lake to the junction with concrete conduit, estimated cost..... 3,000
For protection of wells and repair of roads around Centerville lake, estimated cost..... 10,000
Bridge between Peltier and Vadnais lakes, and raising the roadway, estimated cost..... 1,500

Relative to the wooden conduit, I would say that this conduit was built nine years ago and in places through the fills it has considerably deteriorated, partially for the reason that for the past two or three years it has had little, if any, use. Wherever the conduit is located in cuts and marshy ground I believe it is still in a good state of preservation. I am about to have a careful examination made of the conduit, and within a short time will be able to submit a more detailed report of what is necessary to be done.

In regard to the improvements about Centerville lake, I would say that as long as it is not necessary to use the water of the Rice Lake system, there is no immediate haste for these repairs. They should, however, be made during the first season of low water, in order particularly that the artesian wells may be protected, and we may have access to this source of supply when the occasion demands.

I submit also with this report tables showing the amount of water consumption, the amount of coal consumption, the relative efficiency of the various pumping plants, and the amount of rainfall.

All of which is very respectfully submitted,

L. W. RUNDLETT,
Commissioner of Public Works.

TABLE NO. 36.

COST OF PUMPING WATER AT THE VARIOUS PUMPING STATIONS DURING THE YEAR.

McCARRON LAKE PUMPING STATION.

	Gallons Pumped 1904.	Lbs. Coal Consumed.	No. Galls. per Lb. Coal.
Ten-million gallon engine.....	50,513,600	58,896	857.8
Six-million gallon engine.....	1,676,088,703	2,622,533	639.0
Four-million gallon engine.....	17,958,800	32,236	557.1
Total of three engines.....	1,744,561,100	2,713,665	
Average of three engines, gallons per pound of coal.....			642.8

	Foot Lbs.
Average duty during the year for the ten-million engine.....	99,309,000
Average duty during the year for the six-million engine.....	74,000,000
Average duty during the year for the four-million engine.....	64,505,000
Average duty during the year for the whole plant.....	74,441,000

437794

		Cost of Raising 1,000,000 Gals. One Foot.
Salaries for 1904	$6,315.76	$0.02598
Fuel	5,948.46	0.02453
Waste, oil, repairs, etc	399.11	0.001645
Totals	$12,663.33	$0.05222

WEST SIDE PUMPING STATION.

Amount of water pumped in 1904, gallons	22,848,624
Average daily, gallons	62,598

		Cost of Raising 1,000,000 Gals. One Foot.
Salaries for 1904	$1,597.33	$0.33449
Coal and gasoline	616.67	0.12913
Waste, oil and repairs	195.52	0.040943
Totals	$2,409.52	$0.50457

Work of steam plant—

Gallons pumped in 1904	14,212,080
Average daily, gallons	68,995
Fuel consumed, pounds	164,200
Average duty during the year, foot pounds	15,068,000
Cost for fuel of raising 1,000,000 gallons 1 foot	$0.13129

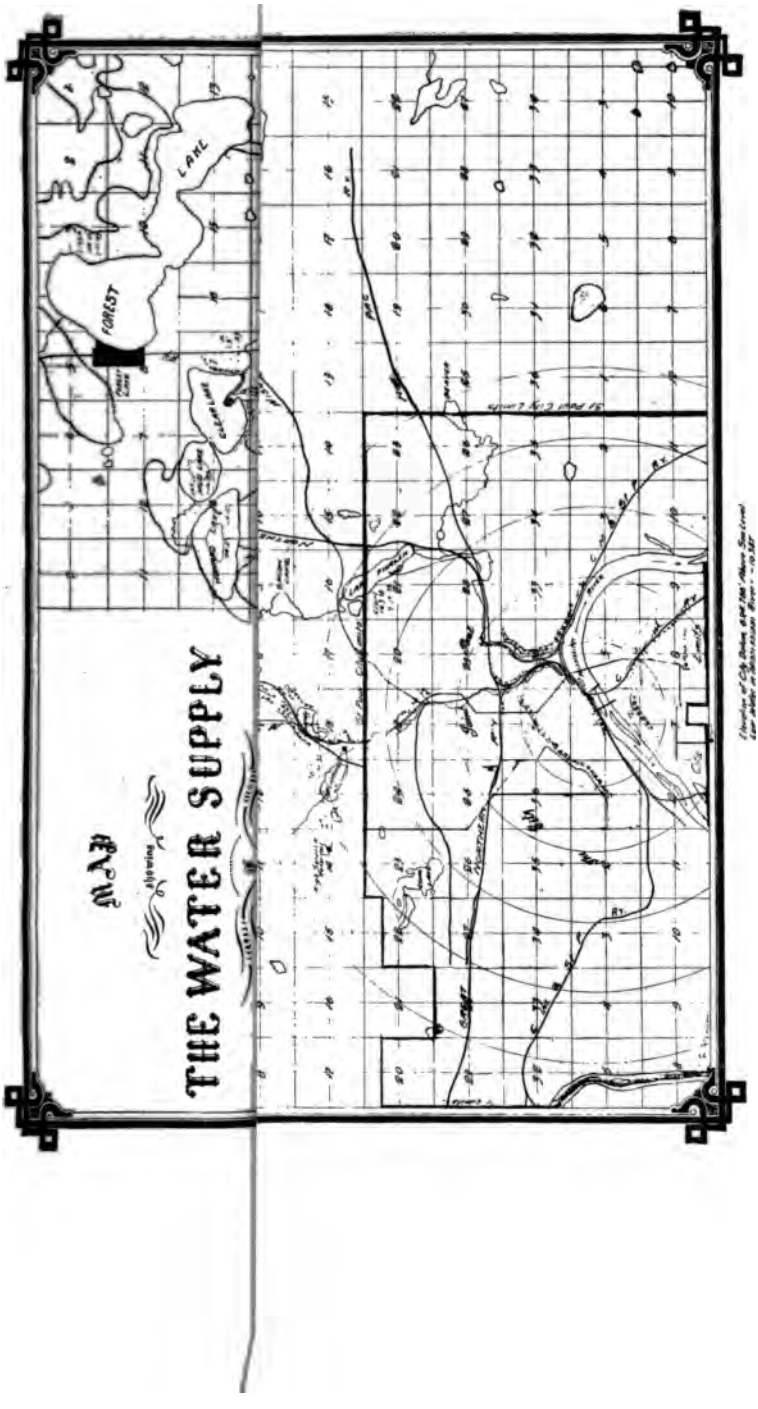
Work of gasoline plant—

Gallons pumped in 1904	8,636,544
Average daily, gallons	55,836
Gasoline consumed in pumping, gallons	1,665
Cost of fuel of raising 1,000,000 gallons 1 foot	$0.11634

VADNAIS LAKE PUMPING STATION.

Amount of water pumped in 1904, gallons	266,306,632
Amount of fuel consumed, pounds	180,700
Average duty during the year, foot pounds	47,878,000

		Cost of Raising 1,000,000 Gals. One Foot.
Fuel	$827.20	$0.0796
Salaries for 1904	518.47	0.0499
Waste, oil, repairs, etc	100.90	0.0097
Totals	$1,446.57	$0.1392



325,076
110°
61.89
20,118,953
92.6
2,725,674
2,434,531

$\frac{3}{4} = 7.38$

$\frac{6}{} = 8.45$

$\frac{6}{} = 9.46$

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CENTERVILLE PUMPING STATION.

Not operated in 1904.

McCARRON LAKE PUMPING STATION.

Economic Evaporation.

Feed water evaporated, cubic feet	325,076
Average temperature of feed	110°
Weight of one cubic foot, pounds	61.89
Total weight of feed water, pounds	20,118,953
Average steam pressure, pounds	92.6
Coal consumed, pounds	2,725,674
Total combustible, pounds	2,434,531

Actual evaporation per lb. of coal $\frac{20,118,953}{2,725,674} = 7.38$

Equivalent evaporation from and at 212° per lb. of coal $\frac{20,118,953 \times 1.1446}{2,725,674} = 8.45$

Equivalent evaporation from and at 212° per lb. of combustible $\frac{20,118,953 \times 1.1446}{2,434,531} = 9.46$

TABLE NO. 34.

WATER CONSUMPTION, 1904.

Month.	From Vadnais Lake.		From Artesian Wells.		From Lake Phalen.		Total Supply.	
	Total.	Daily Average.	Total.	Daily Average.	Total.	Daily Average.	Total.	Daily Average.
January	265,251,896	8,556,512	.....	.....	7,750,000	250,000	273,001,896	8,806,512
February	290,853,207	10,029,765	.....	.....	5,800,000	200,000	296,653,207	10,229,420
March	310,904,383	10,029,173	.....	.....	7,774,614	250,794	318,678,997	10,279,967
April	274,141,768	9,138,058	.....	.....	6,659,158	221,972	280,800,926	9,360,030
May	298,822,536	9,639,436	.....	.....	6,450,207	208,065	305,272,743	9,847,508
June	286,033,470	9,534,449	.....	.....	5,362,783	178,759	291,396,253	9,713,208
July	192,387,993	5,883,483	109,956,000	3,546,968	5,846,025	188,581	308,190,018	9,619,032
August	194,355,877	6,269,544	113,752,848	3,669,446	6,268,675	202,215	314,377,400	10,141,206
September	237,602,624	7,920,087	42,597,784	4,196,845	5,643,303	188,110	285,843,711	9,528,123
October	286,666,584	9,247,309	.....	.....	6,695,813	215,994	293,362,397	9,463,303
November	265,634,526	8,854,484	.....	.....	5,999,376	199,979	271,633,902	9,054,463
December	265,134,926	8,552,739	.....	.....	6,627,739	213,798	271,762,665	8,766,537
Totals	3,167,789,790	8,678,876	266,306,632	3,804,419	76,877,693	210,623	3,510,974,115	9,619,107

TABLE 35.

WATER CONSUMPTION, 1904.

Month.	High Service.		Low Service.		West St. Paul—High Service.		From Centerville.	
	Total.	Daily Average.	Total.	Daily Average.	Total.	Daily Average.	Total.	Daily Average.
January	127,513,100	4,113,326	137,738,796	4,443,187	1,555,848	50,188	.....	.....
February	145,044,900	5,001,548	145,808,307	5,027,872	1,698,732	58,577	.....	.....
March	156,341,900	5,043,287	154,562,483	4,985,886	1,973,916	63,674	.....	.....
April	137,966,400	4,598,880	136,175,368	4,539,179	1,787,778	59,599	.....	.....
May	155,606,000	5,019,548	143,216,536	4,297,307	2,066,715	66,668	.....	.....
June	149,461,600	4,982,053	136,571,870	4,552,395	2,095,560	69,852	.....	.....
July	156,885,300	5,060,812	145,458,693	4,692,216	2,111,220	68,104	.....	.....
August	158,401,100	5,109,713	149,707,625	4,829,278	2,450,880	79,061	.....	.....
September	143,157,300	4,771,910	137,043,108	4,568,103	2,021,580	67,386	.....	.....
October	148,232,100	4,781,680	138,434,484	4,465,628	2,044,620	65,956	.....	.....
November	136,393,400	4,546,446	129,241,126	4,308,037	1,613,880	53,762	.....	.....
December	129,558,000	4,179,290	135,576,926	4,373,449	1,427,895	46,061	.....	.....
Totals	1,744,561,100	4,779,619	1,684,535,322	4,628,863	22,848,624	62,598	.....	.....

TABLE NO. 37.

CLOUDINESS, PRECIPITATION, ETC., ST. PAUL, MINN., 1904.

Month.	Number of Days.			Mean Cloudiness on a Scale of "0" to "10," "0" Clear and "10" Entirely Cloudy.	Mean Relative Humidity.	No. of Days with .01 Inch or more Precipitation.	Total Precipitation, Inches and Hundredths.	Mississippi River Stages of Water in Feet and Tenths.			
	Clear.	Partly Cloudy.	Cloudy.					Highest.	Date.	Lowest.	Date.
January	17	5	9	4.5	82	5	0.41	3.2	14	3.0	30
February	12	6	11	5.2	85	12	0.76	3.2	26	3.0	5-19
March	2	9	20	7.5	80	11	1.47	6.0	31	3.2	3-8
April	15	7	8	4.3	67	9	1.74	9.9	11-12	5.5	3
May	12	8	11	5.0	61	10	3.20	8.3	1	5.8	31
June	7	13	10	5.8	70	14	4.99	7.8	11	4.9	26
July	17	6	8	4.0	71	13	5.73	5.2	1-2	3.3	29
August	17	6	8	4.5	70	9	5.41	3.8	25-28	2.6	19
September	11	6	13	5.6	76	8	4.50	5.2	10-11	2.8	2
October	9	7	15	6.0	76	11	5.05	7.8	27-28	3.2	1
November	15	5	10	4.7	70	3	0.12	6.5	1	3.4	30
December	6	11	14	6.5	79	8	0.73	3.7	11-12	2.6	5-6
Total	140	89	137	63.6	887	113	34.11	.....	.....	.....	.....
Mean	....	....	....	5.3	74	.....	.....	.....	.....	.....	.....

From Weather Bureau records.
River opened March 14th, closed December 10th.

TABLE NO. 38.

RECORD OF THE MONTHLY AND ANNUAL RAINFALL (in inches) FROM 1837 TO 1904, INCLUSIVE, ST. PAUL, MINNESOTA.

Year.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total for Year.
1837	0.27	0.35	0.33	0.95	2.65	3.40	2.73	1.32	5.10	3.15	1.37	2.34	24.02
1838	0.65	0.76	0.15	2.41	3.05	4.76	11.11	3.08	0.71	0.16	0.43	0.45	27.72
1839	1.34	0.36	0.71	2 71	3.28	1.80	3.50	1.04	1.61	2.11	1.66	1.01	21.13
1840	0.49	0.49	0.65	1.55	2.31	3.50	2.89	3.40	2.33	2.21	3.22	0.13	23.17
1841	0.24	0.21	1.43	1.40	1.50	4.24	1.57	1.17	6.10	1.55	0.84	1.42	21.70
1842	0.95	0.72	0 44	2.17	1.68	3.73	1.78	4.81	4.83	2.11	3.46	0.60	27.28
1843	1.15	1.46	0.82	0.75	3.12	5.22	2.09	1.84	5.14	0.50	1.43	0.27	23.79
1844	1.50	0.72	0.97	5.16	4.50	1.64	4.80	4.37	4.26	0.97	0.77	0.58	30.24
1845	0.49	1.40	2.80	3.15	1.51	6.80	2.56	3.28	2.21	0.66	0.40	0.08	25.34
1846	0.52	0.03	1.71	2.90	2.00	3.10	4.95	3.80	2.33	2.45	2.10	0.21	26.10
1847	0.29	0.11	0.44	0.45	4.96	2.66	3.66	2.49	4.00	0.37	1.71	0.66	21.80
1848	0.62	1.13	1.71	0.18	5.28	2.83	4.60	3.19	2.46	0.68	0.10	0.40	23.18
1849	1.00	0.61	4.11	5.62	6.57	3.14	7.59	9 60	2.75	5.35	1.40	1.95	49.69
1850	1.67	0.83	2.23	2.60	0.57	4.62	6.15	2.97	1.82	0.32	1.68	0.04	25.50
1851	0.20	0.13	1.23	2.68	3.96	2.15	2.60	3.29	3.64	1.18	2.31	0.05	23.42
1852	1.09	0.58	1.55	2.16	2.05	5.16	1.57	0.89	2.51	4.10	1.92	2.27	25.85
1853	0.00	0.01	0.02	0.73	4.08	7.59	1.65	2.57	2.14	0.01	0.56	1.11	20.47
1854	0.72	0.03	1.03	2.51	4.30	3.31	3.92	1.75	6.55	1.23	0.60	0.64	26.59
1855	1.67	0.41	1.84	0.28	1.23	2.38	1.32	4.41	6.26	0.90	2.38	1.67	24.75
1856	0.89	0.18	0.22	4.47	1.62	0.76	2.47	1.09	3.24	3.97	1.70	2.01	22.62
1857	3.48	0.94	0.79	4.25	2.05	6.74	0.65	2.03	2.46	0.00	5.75	2.95	32.09
1858	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1859	0.50	0.50	3.33	1.70	4.95	5.49	2.95	2.72	3.95	0.46	2.01	0.75	29.31
1860	0.14	1.15	1.04	2.92	6.85	5.00	1.76	0.88	4.72	4.64	0.52	0.41	30.03
1861	0.55	1.94	0.15	2.50	6.36	4.86	2.69	2.97	2.67	2.80	2.54	0.10	30.13
1862	1.35	0.59	0.95	2.67	1.35	2.66	10.15	4.58	2.89	1.06	0.59	1.37	30.21
1863	1.12	0.93	1.97	0.80	2.87	0.02	0.63	3.19	1.23	1.44	0.29	1.30	15.79
1864	0.38	0.00	1.28	0.56	0.47	1.62	4.00	2.00	1.14	1.60	1.09	0.71	14.85
1865	0.65	1.85	2.10	4.29	4.20	6.72	2.55	9.16	1.90	2.30	0.23	2.19	38.14
1866	2.00	0.30	1.32	2.26	0.39	6.00	2.30	4.73	2.26	2.64	3.19	0.50	27.89
1867	0.97	1.12	1.00	2.93	4.45	9.55	2.83	2.32	5.71	1.01	0.58	0.66	33.13
1868	1.71	1.51	1.22	1.31	3.96	2.68	4.05	3.08	2.88	4.56	3.69	0.58	31.23
1869	0.42	2.83	0.96	0.56	2.34	2.22	1.67	7.62	10.61	0.88	0.75	0.96	31.82
1870	1.34	0.60	2.10	1.39	5.24	0.79	3.13	8.56	3.28	1.95	1.40	0.90	30.68
1871	1.61	0.41	2.06	4.25	2.70	6.56	1.48	4.87	2.18	1.90	1.41	1.20	30.63
1872	0.28	0.26	1.64	1.69	5.71	3.81	4.23	3.52	5.62	0.52	1.91	2.08	31.27
1873	1.31	1.54	1.34	2.44	4.63	7.74	3.83	4.61	2.56	2.56	0.79	0.38	33.74
1874	0.49	1.07	2.24	0.95	1.65	11.67	1.94	3.90	5.76	3.22	1.90	0.72	35.51
1875	1.41	1.72	2.19	2.27	3.06	4.33	0.82	8.74	2.16	1.56	0.84	1.56	30.66
1876	0.73	0.66	1.43	2.23	3.15	2.02	2.73	5.28	2.99	1.27	0.93	0.25	23.67
1877	0.55	0.01	1.57	1.92	5.43	7.13	0.52	2.83	2.56	3.62	1.24	1.42	28.80
1878	1.00	0.67	1.24	2.43	2.33	3.58	4.47	1.43	2.13	1.85	0.61	1.04	22.78
1879	0.11	1.12	0.97	0.45	7.18	1.76	9.32	2.78	2.26	2.56	1.41	2.47	32.39
1880	0.81	0.97	2.30	1.58	2.63	5.55	2.75	3.63	1.74	2.18	2.93	2.69	29.76
1881	4.34	2.55	1.06	0.47	4.34	2.87	2.60	4.55	9.95	4.44	1.36	0.53	39.06
1882	0.67	2.35	3.25	1.61	2.44	2.68	2.84	2.45	0.27	1.99	1.61	0 98	23.14
1883	0 64	0.44	0.06	4.92	2.12	7.04	4.33	1.22	2.23	1.10	1.01	1.59	26.70
1884	0.48	1.27	1.34	2.00	2.09	3.57	2.93	2.89	4.48	2.43	0.65	1.98	26.11
1885	0.30	0.20	0.55	3.19	2.12	3.73	5.86	3.69	3.52	0.93	0.60	0.64	25.33
1886	1.76	0.25	1.09	3.67	0.82	3.63	1.44	2.27	3.69	0.72	2.07	1.48	22.89
1887	1.79	0.89	0.33	3.14	1.60	2.89	3.89	3.37	4.35	1.48	0.65	1.47	25.85
1888	0.72	0.64	1.11	5.14	4.75	1.95	5.55	2.23	1.70	1.10	0.34	0.63	25.86
1889	0.55	0.30	0.99	1.14	2.86	1.61	3.08	3.56	0.51	2.06	0.97	1.32	18.95
1890	0.95	0.50	1.11	1.80	3.66	5.29	1.87	2.20	2.73	2.79	0.38	0.10	23.38
1891	1.01	1.18	0.94	1.71	1.33	4.08	2.07	3.42	0.58	1.57	1.03	2.87	21.79
1892	0.20	1.44	0.75	0.97	5.17	7.50	9.04	3.66	1.72	1.39	0.36	0.53	32.73
1893	0.73	1.87	1.96	5.30	2.66	2.00	1.68	2.40	2.70	1.49	0.81	2.35	25.95
1894	1.04	0.10	3.28	4.30	6 63	1.51	0.13	0.36	1.82	4.49	0.61	1.53	25.85
1895	1.05	0.42	0.85	2.09	2.89	4.18	4.12	2.59	4.75	0.09	0.85	0.38	24.20
1896	0.81	0.17	2.93	5.63	4.67	3.30	1.12	4.48	2.45	3.39	5.07	0.71	34.73
1897	2.13	1.03	2.95	1.56	1.81	8.18	6.35	2.18	1.33	1.87	0.93	0.20	30.52
1898	0.04	1.69	1.96	1.22	3.40	2.71	1.94	3.93	0.90	5.81	1.59	0.15	25.35
1899	0.87	0.95	2.87	1.35	3.50	7.23	1.51	2.80	1.21	3.09	0.81	1.35	27 54
1900	0.66	0.73	1.48	1.80	0.34	1.98	5.81	3.13	9.39	7.55	0.88	0.47	34.22
1901	0.37	0.40	2.52	1.14	1.64	7.21	2.30	2.08	5.04	0.91	1.60	0.54	25.75
1902	0.53	0.68	0.58	3.04	3.92	2.49	5.50	5.64	3.16	1.33	2.40	2.48	31.75
1903	0.26	0.62	2.33	3.46	5.28	1.16	5.61	4.90	7.89	5.41	0.35	0.65	37.87
1904	**0.41**	**0.76**	**1.47**	**1.74**	**3.20**	**4.99**	**5.73**	**5.41**	**4.50**	**5.05**	**0.12**	**0.73**	**34.11**
Av'r'ge	0.910	0.815	1.459	2.312	3.245	4.105	3.466	3.450	3.380	2.134	1.398	1.056	27.737

1904, INCLUSIVE.

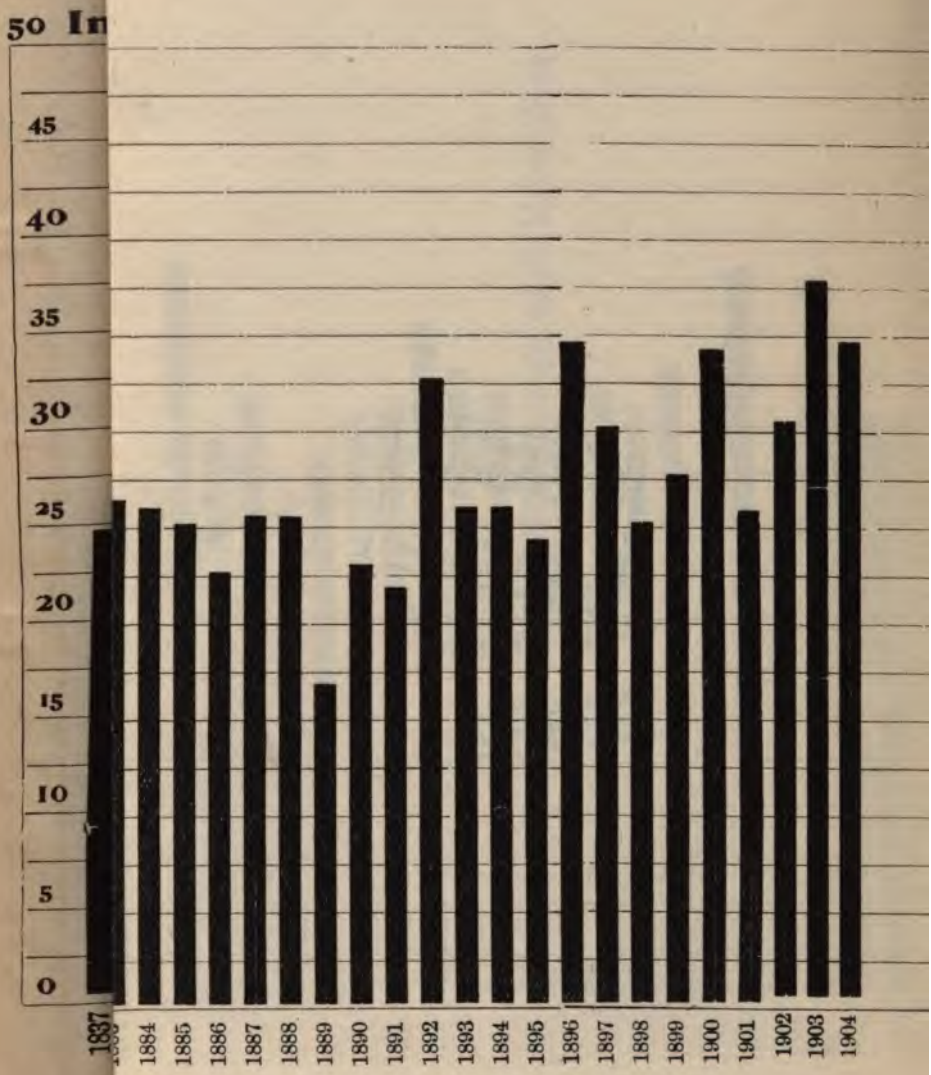

TABLE NO 40.

AVERAGE DAILY WATER CONSUMPTION. 1895 TO 1904 INCLUSIVE.

Years	Months.												Daily Average for the Year
	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	
1895	7,490,668	7,647,104	7,268,802	7,497,870	7,580,620	9,272,192	9,749,946	10,262,801	9,112,039	8,446,931	7,450,643	7,441,429	8,305,157
1896	8,438,286	8,487,724	8,260,476	7,911,656	8,410,452	9,205,490	9,930,884	9,732,887	8,937,738	8,552,171	7,992,981	6,960,512	8,593,461
1897	7,076,718	6,927,512	7,034,493	6,715,957	8,560,225	8,538,505	7,910,798	7,296,800	6,985,903	6,844,886	6,819,733	7,116,452	7,322,800
1898	6,502,905	6,716,575	6,613,214	6,732,910	8,103,733	8,676,843	10,384,437	9,120,500	9,114,350	7,580,274	8,449,670	7,912,368	8,000,048
1899	7,750,312	8,957,038	8,343,366	8,175,877	8,767,050	8,951,419	9,754,710	9,356,020	8,123,518	7,801,652	7,043,024	7,045,289	8,337,207
1900	6,816,157	7,317,504	6,968,337	7,490,914	9,081,364	10,368,842	9,033,084	9,923,429	8,544,477	7,333,000	6,836,690	6.488,971	8,019,982
1901	7,197,966	7,109,987	6,716,550	7,156,103	8,427,201	8,255,544	9,696,511	9,801,577	8,807,031	7,505,746	7,051,882	8,475,824	8,026,435
1902	7,523,424	7,658,808	7,462,332	8,043,034	8,146,496	8,827,217	8,476,811	8,676,963	8,151,880	8,550,673	7,627,652	7,901,365	8,066,492
1903	8,325,926	8,632,621	8,353,050	8,479,586	8,885,312	9,981,093	9,677,311	9,207,833	9,008,827	8,567,025	8,108,774	8,552,955	8,815,248
1904	8,806,512	10,229,420	10,279,967	9,360,030	9,847,508	9,713,208	9,619,032	10,141,206	9,528,123	9,463,303	9,054,463	8,766,537	9,619,107

REPORT OF SUPERINTENDENT OF METERS FOR THE YEAR 1904.

St. Paul, Minn., Jan. 1, 1905.

Mr. John Caulfield, Secretary Board of Water Commissioners,

Dear Sir: I herewith submit a report of the number of meters received during the year, the number set, the number now in service, the net increase in years and the average yearly increase, also the number of new meters on hand this date, the number from vacant premises, also private meters in shop, the number of meters tested during the year, the number of meters repaired and the kind of repairs made, also the different parts of meters on hand, and the customary inventory.

Number of ⅝-inch meters received during the year	600
Number of ¾-inch meters received during the year	18
Number of 1 -inch meters received during the year	36
Number of 1½-inch meters received during the year	18
Number of 2 -inch meters received during the year	6
Number of 3 -inch meters received during the year	.....
Number of 4 -inch meters received during the year	.....
Total number of meters received	678

Number of meters set during the year	782
Total number of meters now in service	7,909
Increase Jan. 1, 1895, to Jan. 1, 1905	6,800
Average yearly increase	680
New meters on hand	41
Meters in shop from vacant buildings	107
Private meters in shop	3
Meters in shop for repairs	37
Worn out meters in shop	34
Grand total of all meters in shop	222
Number of meters repaired during the year	837
Number of new meters tested during the year	825
Number of old meters tested during the year	225
Total of all meters tested during the year	1,050

REPORT OF METERS REPAIRED DURING THE YEAR.

Stopped from accumulation of rust or mud	195
Broken or defective intermediate gears or pistons	145
Broken or defective dial gears	201
Injured by frost	115

Injured by hot water	24
Worn out	34
Removed on account of noisy action	1
Examined for accuracy after long use	9
Disc broken or worn out	33
Exchanged for meters of same size	36
Exchanged for meters of larger size	27
Removed on account of changing pipes	.....
Stopped and needed refitting of pistons or discs	21
Leaky stuffing boxes	103
Removed on account of vacation of premises	170

METERS IN SHOP AND FROM VACANT BUILDINGS, ALSO PRIVATE METERS.

Kind of Meters.	Size.	In Stock.	Vacant Buildings.	Private Meters.	Total.
Crown	⅜	1	...	...	1
Crown A	⅝	...	8	...	8
Crown AA	⅝	2	10	...	12
Crown A	¾	3	2	...	5
Crown A	1	2	1	...	3
Crown AA	1	...	1	...	1
Crown A	1½	1	1	...	2
Crown A	2	1	...	...	1
Empire AA	¾	1	...	...	1
Gem	3	1	...	1	2
Pittsburg Disc	⅝	10	60	...	70
Pittsburg Disc	¾	1	1	...	2
Pittsburg Disc	1½	2	1	...	3
Hersey Rotary	¾	1	1	...	2
Hersey Rotary	1½	1	...	...	1
Union Rotary	⅝	4	3	...	7
Union Rotary	1½	1	2	...	3
Westinghouse	1	1	...	...	1
Westinghouse	2	1	...	...	1
Niagara	⅝	1	11	...	12
Niagara	2	...	...	1	1
Thompson B	½	...	1	...	1
Trident	⅝	...	2	...	2
Trident	1	1	...	...	1
Nash	⅝	...	2	1	3
Improved Worthington	⅝	2	...	...	2
Improved Worthington	¾	1	...	...	1
Improved Worthington	1	1	...	...	1
Improved Worthington	1½	1	...	...	1
	...	41	107	3	151

WORN-OUT METERS IN SHOP.

3 3 -inch Worthington.
2 ⅝-inch Empire.
1 ¾-inch Empire.
1 1 -inch Empire.
6 ⅝-inch Thompson B.
2 ¾-inch Thompson B.
2 1 -inch Thompson B.
6 ⅝-inch Union Rotary.
1 ¾-inch Union Rotary.
6 1 -inch Union Rotary.
3 ⅝-inch Westinghouse.
1 1 -inch Crown.

Total, 34.

METERS IN SHOP FOR REPAIRS.

2 ⅝-inch Pittsburg Disc.
1 ¾-inch Pittsburg Disc.
4 ⅝-inch Union Rotary.
2 1 -inch Union Rotary.
2 1½-inch Union Rotary.
2 1½-inch Crown.
2 ⅝-inch Hersey Disc.
2 ⅝-inch Hersey Rotary.
1 ⅝-inch Thompson B.
1 ⅝-inch Niagara.
1 3 -inch Gem.
1 3 -inch Gem Private.
4 ⅝-inch Empire.
5 1 -inch Empire.
3 2 -inch Empire.
1 ⅝-inch Empire AA.
1 ⅝-inch Nash.
2 ⅝-inch Columbia.

Total, 37.

PARTS OF METERS IN SHOP.

13 Sets Hersey intermediate gearing.
3 Dozen Hersey gear wheels.
1 ¾-inch Hersey top casting.
4 Dozen Hersey chamber plate screws.
1 ⅝-inch Hersey dial face.
12 Improved Worthington dials.
32 Sets Crown intermediate gearing.
3 ⅝-inch Crown AA reading dials.
5 ⅝-inch Crown A reading dials.
36 ⅝-inch Crown flange bolts.
25 Dozen Crown change gear wheels.
1 ⅝-inch Crown A bottom casting.
10 ⅝-inch Crown AA top castings.
22 ⅝-inch Crown A top castings.
1 ¾-inch Crown A top casting.
1 1-inch Crown AA top casting.
2 1-inch Crown A top castings.
1 1½-inch Crown A top casting.
4 ⅝-inch Crown A piston chambers.
11 ⅝-inch Crown A piston chamber plates.
9 ⅝-inch Crown AA rubber pistons.
8 ⅝-inch Crown A rubber pistons.
1 ¾-inch Crown A rubber piston.
2 1-inch Crown A rubber pistons.
4 ⅝-inch Crown A dial faces.
6 2-inch Crown A dial faces.
4 ⅝-inch Crown AA covers.
7 ⅝-inch Crown A covers.
6 ⅝-inch Nash A rubber discs.
5 ⅝-inch Nash AA top castings.
4 ⅝-inch Nash A top castings.
1 Dozen Empire change gear wheels.
1 ⅝-inch Empire reading dial.
7 ⅝-inch Empire dial faces.
6 Sets Thompson B intermediate gearing.
4 ⅝-inch Thompson B rubber discs.
6 ¾-inch Thompson B rubber discs.
1 1-inch Thompson B rubber disc.
1½ Dozen Thompson B change gear wheels.
1 ¾-inch Thompson B disc chamber.
4 Sets Trident intermediate gearing.
3 ⅝-inch Trident reading dials.
14 ⅝-inch Trident rubber discs.
3 ⅝-inch Trident piston chambers.
1½ Dozen Trident change gear wheels.
10 Sets Union Rotary intermediate gearing.
1 Set Union Rotary rubber pistons.
10 ⅝-inch Union Rotary top castings.
10 1½-inch Union Rotary rubber gearing.
1 ⅝-inch Columbia rubber piston.
29 Sets Pittsburg intermediate gearing.
28 Dozen Pittsburg change gear wheels.
8 Dozen ⅝-inch Pittsburg flange bolts.
17 ⅝-inch Pittsburg rubber discs.
13 ¾-inch Pittsburg rubber discs.
6 1-inch Pittsburg rubber discs.
3 1½-inch Pittsburg rubber discs.
2 2-inch Pittsburg rubber discs.
20 ⅝-inch Pittsburg frost bottoms.
12 ¾-inch Pittsburg frost bottoms.
4 1-inch Pittsburg frost bottoms.
1 1½-inch Pittsburg frost bottom.
7 Sets Westinghouse intermediate gearing.
8 Sets Niagara intermediate gearing.
1½ Dozen Niagara change gear wheels.
6 ⅝-inch Niagara rubber discs.
9 ⅝-inch Niagara top castings.
3 ⅝-inch Niagara bottom castings.
2 ¾-inch Niagara top castings.
2 1-inch Niagara top castings.
2 1-inch Niagara bottom castings.

TOOLS IN SHOP.

1 Kit plumber tools.
2 Plumbers' furnaces.
2 Tinners' solder irons.
6 Stilson pipe wrenches.
2 Tryno pipe wrenches.
1 Small monkey wrench.
9 S wrenches.
1 Machinists' hammer.
2 Rivet hammers.
4 Bastard flat files.
3 Square files.
6 Round files.
8 Saw files.
8 Screw drivers.
7 Pairs pliers.
3 Small chisels.
4 Punches.
3 Cold chisels.
2 Breast drills (1-16 to ½-inch).
1 Hack saw.
5 Hack saw blades.
1 Small steel bar.
2 Compass saws.
2 Hand saws.
1 Two-foot steel square.
1 Carpenter's plane.
1 Saw set.
2 Wood chisels.
2 Spirit levels.
1 50-foot tape line.
2 Two-foot rules.
2 Sealing stamps.
2 Pounds sealing wax.
1 Fairbanks 1200-pound scale.
1 Testing tank.
9 Electric hand lamps.
8 Pounds copper wire.
1 Oil stone.
1 Divider.
1 Set Little Giant stock and dies.
1 Stock and dies from ⅜-in to 1-in.
2 Expansion bits.
1 Pressure gauge.
2 Emery wheels.
30 Wooden meter boxes.
60 Short pieces meter boxes.

GEORGE DOORLEY,
Superintendent of Meters.

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